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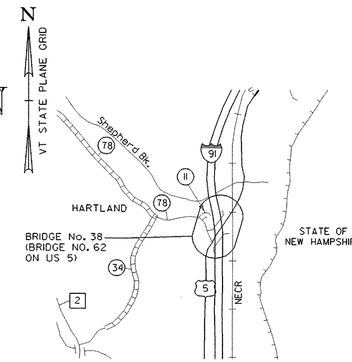
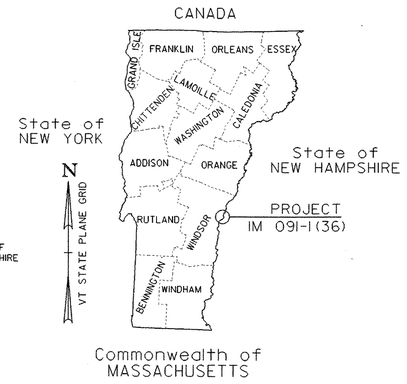
STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF HARTLAND
COUNTY OF WINDSOR
ROUTE No.: I-91 BRIDGE No.: 38

PROJECT LOCATION:	US 5 MM 3.75 OVER I-91 MM 63.4, (BRIDGE 62 ON US 5)
PROJECT DESCRIPTION:	INSTALL TWO-WAY TEMPORARY BRIDGE, REMOVE AND REPLACE DECK ON EXISTING STEEL, REMOVE TEMPORARY BRIDGE AND PAINT EXISTING STEEL
LENGTH OF STRUCTURE:	374.64 FEET
LENGTH OF ROADWAY:	200 FEET
LENGTH OF PROJECT:	574.64 FEET





LOCATION MAP

RECORD PLANS

CONTRACTOR: FW WHITCOMB CONST. CORP.

RESIDENT ENGINEER: JACK COUTURE

CONSTRUCTION BEGAN: MAY 5, 2003

CONSTRUCTION COMPLETE: SEPTEMBER 27,2004

RECORD PLANS BY: K. NORTH , N. GARBACIK

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY Jacques D Couture RESIDENT ENGINEER

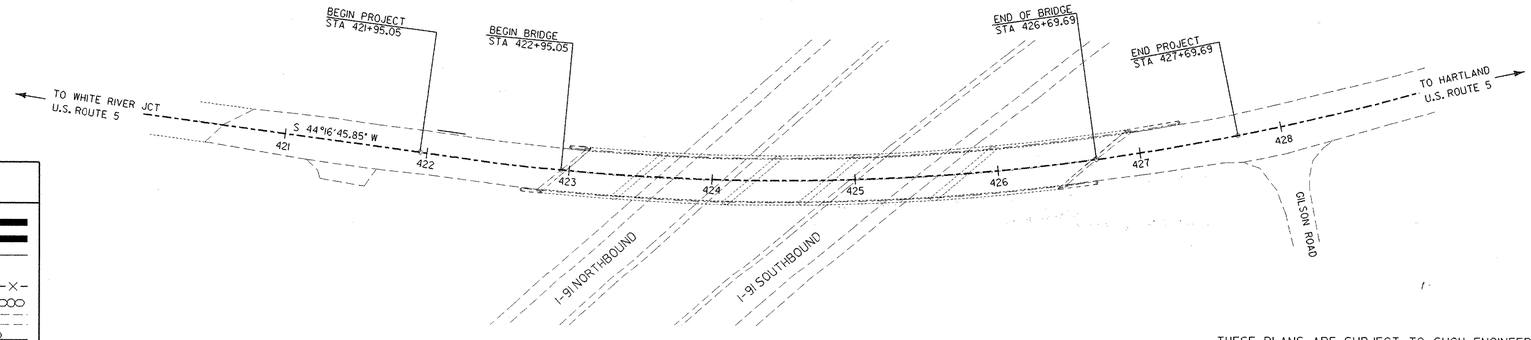
DATE 6-15-05

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

LIST OF STANDARDS

E-100	01-06-97
E-101	03-10-97
E-102	08-08-95
E-103	09-23-98
E-106	08-08-95
E-140	08-30-96
E-152	08-08-95
E-171A	08-09-95
E-171B	08-09-95
E-172	08-09-95
E-173	08-09-95
E-175	11-17-93
E-193	08-18-95
F-1	06-01-94
G-1	01-03-00
G-1D	01-03-00
G-18	06-01-94
T-1	06-01-94
T-2	06-01-94

SB-RG-82 01/06/95



SCALE 1" = 50'-0

50 0 50

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS SR SR SR
TOP OF CUT
TOE OF SLOPE

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD-83(96)

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROJECT DEVELOPMENT.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JANUARY 4, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

STONE & WEBSTER, INC.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR

APPROVED Mark DATE 3/24/03

DIRECTOR OF PROJECT DEVELOPMENT

APPROVED Dan DATE 12/23/02

PROJECT MANAGER : SHERWARD FARNSWORTH

PROJECT NAME : HARTLAND
PROJECT NUMBER : ACIM 091-1(36)

SHEET 1 OF 85 SHEETS

20-DEC-2002

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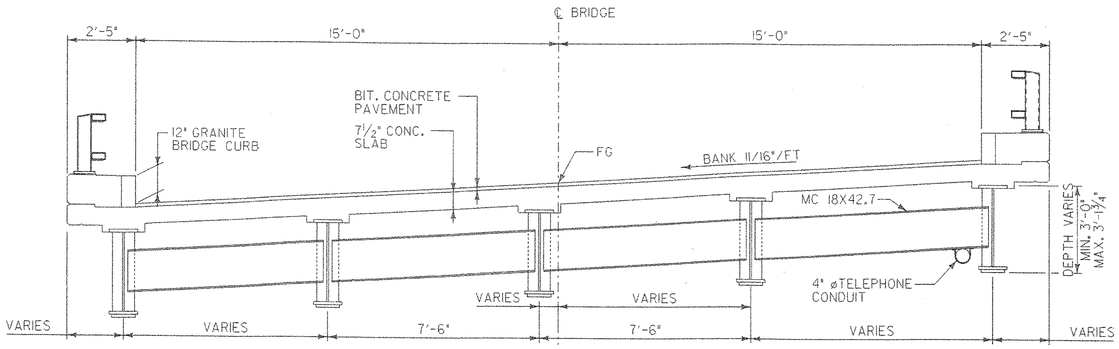
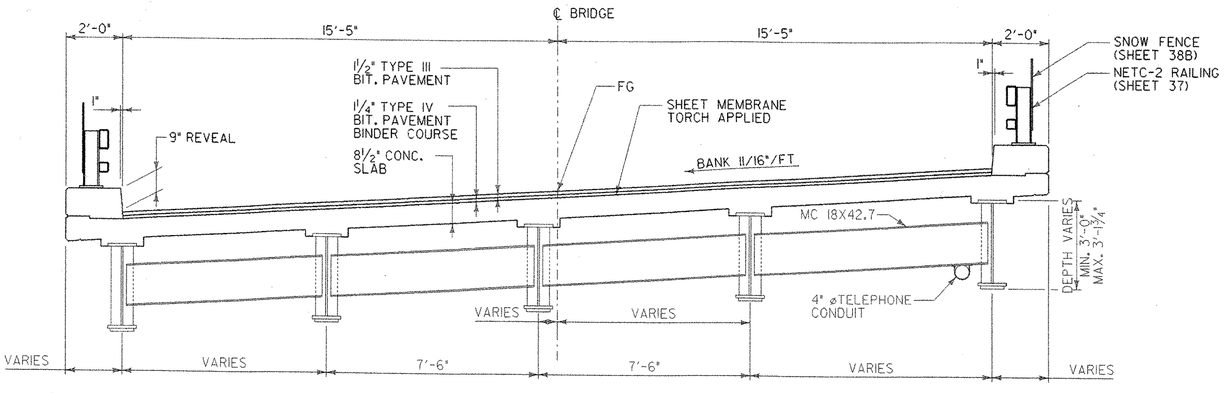


EXISTING BRIDGE
SCALE: 3/8" = 1'-0"



TYPICAL SECTION
SCALE: 3/8" = 1'-0"

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2001	2300	320	-	8%	-
2002	2400	330	-	8%	-

SCALE 3/8" = 1'-0
1 0 1 2 3 4

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA:
CHARACTER OF TERRAIN:
CHARACTER & TYPE OF STREAM:
NATURE OF STREAMBED:

Q2.33 = Q50 =
Q10 = Q100 =
Q25 = Q500 =

DATE OF FLOOD OF RECORD:
WATER SURFACE ELEV.: ESTIMATED DISCHARGE:
NATURAL STREAM VELOCITY @ Q50 =
ICE CONDITIONS: DEBRIS:
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY?
IS ORDINARY RISE RAPID?
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?
IF YES, DESCRIBE:

WATERSHED STORAGE ___ HEADWATERS
UNIFORM THROUGHOUT WATERSHED ___ IMMEDIATELY ABOVE SITE ___

EXISTING STRUCTURE

STRUCTURE TYPE:
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY OF FULL OPENING:
DISPOSITION OF STRUCTURE:

TYPE OF MATERIAL UNDER SUBSTRUCTURE:

WATER SURFACE ELEV. @ Q2.33 = ____ VELOCITY =
Q10 = ____ =
Q25 = ____ =
Q50 = ____ =
Q100 = ____ =

LONG TERM STREAM BED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW THE Q100? ____ FREQUENCY:
RELIEF ELEVATION: ____ DISCHARGE OVER ROAD @ Q100:

UPSTREAM STRUCTURE: TOWN: ____ DISTANCE:
HIGHWAY NO.: ____ STRUCTURE NO.:
STRUCTURE TYPE:
CLEAR SPAN: ____ CLEAR HEIGHT:
YEAR BUILT: ____ FULL WATERWAY:

DOWNSTREAM STRUCTURE: TOWN: ____ DISTANCE:
HIGHWAY NO.: ____ STRUCTURE NO.:
STRUCTURE TYPE:
CLEAR SPAN: ____ CLEAR HEIGHT:
YEAR BUILT: ____ FULL WATERWAY:

PROPOSED STRUCTURE

STRUCTURE TYPE:

CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY OF FULL OPENING:

WATER SURFACE ELEV. @ Q2.33 = ____ VELOCITY =
Q10 = ____ =
Q25 = ____ =
Q50 = ____ =
Q100 = ____ =

IS THE ROADWAY OVERTOPPED BELOW THE Q100? ____ FREQUENCY:
RELIEF ELEVATION: ____ DISCHARGE OVER ROAD @ Q100:

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:
VERTICAL CLEARANCE @ Q 100 =

SCOUR:
REQUIRED CHANNEL PROTECTION:

PERMIT INFORMATION

AVERAGE DAILY FLOW: ____ ELEV. =
ORDINARY LOW WATER: ____ ELEV. =
ORDINARY HIGH WATER: ____ ELEV. =

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE:
CLEAR SPAN (NORMAL TO STREAM): ____ TOTAL
VERTICAL CLEARANCE ABOVE STREAMBED: ____ ELEV.
WATERWAY OF FULL OPENING:

DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO HS - 25 FOR DECK AND SUPERSTRUCTURE
2. DESIGN SPAN 54-79-54-94-94
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING 20 TONS TYPE TIMBER ESTIMATED LENGTH N/A
5. STRUCTURAL STEEL AASHTO GRADE ASTM-A36-62 PAINTED
6. REINFORCING STEEL GRADE 60
7. CONCRETE CLASS A f'_c = 4000 PSI
   CONCRETE CLASS B f'_c = 3500 PSI
   SILICA-FUME CONCRETE f'_c = 5000 PSI

TRAFFIC MAINTENANCE:

1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE NO OR ON TEMPORARY BRIDGE YES
   SEE SPECIAL PROVISIONS 528.11
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY TWO TRAFFIC CONTROL SIGNALS REQUIRED N/A
   MINIMUM CLEAR SPAN (NORMAL TO STREAM): N/A VERTICAL CLEARANCE ABOVE STREAMBED: N/A
   WATERWAY AT FULL OPENING: N/A
   ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? N/A

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	3S2	6 AXLE	3A.STR.	4A.STR.	5A.SEMI
INVENTORY A = 2.17	26	46					
POSTED A = 1.55	37	65	75		55	61	70
OPERATING A = 1.30		77	89	104	65	73	

STRENGTH RF = $\frac{\phi M_N - 1.3 M_{DL}}{A \times M_{LL+I}}$

SERVICEABILITY RF = $B\left[\frac{.95 F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67 M_{LL+I}}\right]$

STONE & WEBSTER, INC

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

PRELIMINARY INFORMATION SHEET

Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
I.G.C. Info. za272pis.dgn	
Bridge Sheet No.	Sheet 2 of 85

04-FEB-2003
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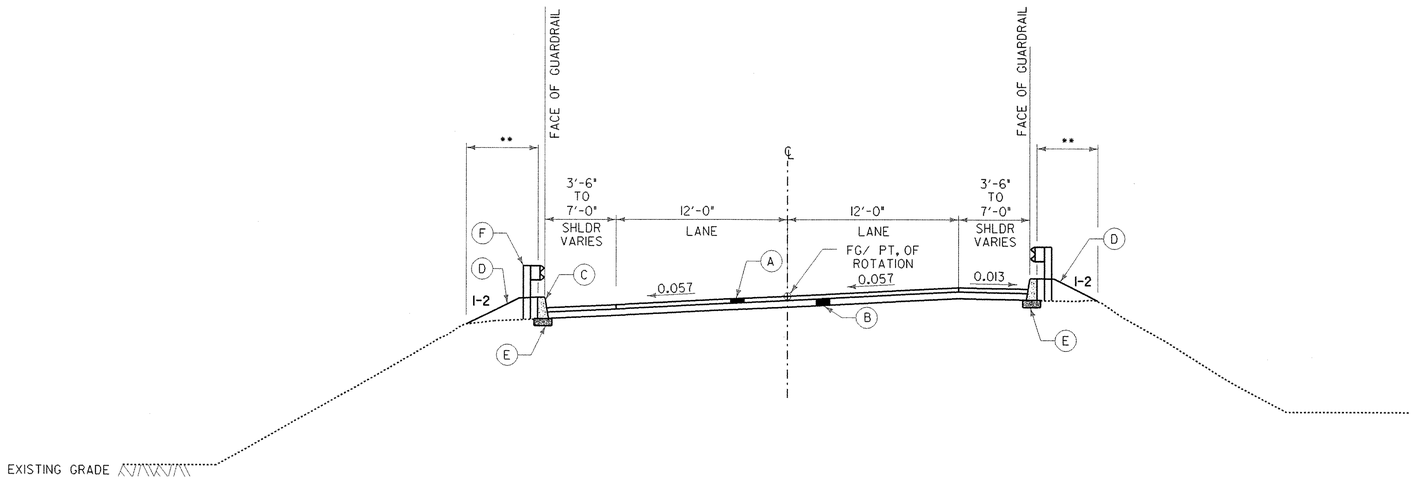
ROADWAY TYPICAL SECTION



U.S. ROUTE 5
FULL BANKED SECTION

STA 421+95 TO STA 422+95
STA 426+69 TO STA 427+69

COLD PLANE* BIT. CONCRETE AND PLACE 1.5" BIT. CONCRETE TYPE III FROM STA 421+95 TO STA 422+20, STA 426+95 TO STA 427+69.

REMOVE TOP 4" OF MATERIAL, PLACE BIT. CONCRETE TYPE III, AND BIT. CONC TYPE II FROM STA 422+20 TO 422+70.

PLACE BIT. CONCRETE TYPE IV, AND BIT. CONC TYPE III OVER NEW CONCRETE APPROACH SLAB. SEE SHEET 27 FOR APPROACH SLAB AND BIT. CONCRETE DETAILS.

		MATERIAL ITEM	THICKNESS TOLERANCE
(A)	ITEM 406.25	1½" BITUMINOUS CONCRETE TYPE III	± ¼"
(B)	ITEM 406.25	BITUMINOUS CONCRETE PAVEMENT, TYPE II (DEPTH VARIES) (EACH LIFT = 2 INCHES MAX.)	± ¼"
(C)	ITEM 616.28	CONCRETE CURB, FOR LIMITS OF CURBING, SEE "GUARDRAIL APPROACH SECTION NETC 2 RAIL" SHEET 37 AND 38.	
(D)	ITEM 651.35 ITEM 651.15 ITEM 651.25	6" TOPSOIL, SEED AND HAY MULCH	
(E)	ITEM 301.15	6" GRAVEL SUBBASE	
(F)	ITEM 621.21	HEAVY DUTY STEEL BEAM GUARDRAIL (WITH STEEL POST)	

* COLD PLANE DEPTH VARIES FROM 1" TO 2".
** LIMIT OF 6" TOPSOIL, SEED AND MULCH

SEEDING FORMULA
URBAN AREAS

% WT.	LB/AC	NAME	PUR %	GERM %
42.5	33.91	CREEPING RED FESCUE	98	85
10.0	8.03	PERENNIAL RYE GRASS	95	90
42.5	33.91	KENTUCKY BLUE GRASS	85	85
5.0	4.46	ANNUAL RYE GRASS	95	85
100.0	80.31			

GENERAL NOTES

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 1692 LB/ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MARKER POSTS: TO BE REMOVED AND RESET AS DIRECTED BY THE ENGINEER.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH)	± ¼"
SUBBASE	± 1"
SAND	± 1"

SCALE 1" = 5'-0
5 0 5

STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
ROADWAY TYPICAL SECTION	
FULL BANKED SECTION	
Designed By J. BARRACK	Drawn By K. PRM-TAN
Checked By J. BARRACK Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272txl.dgn	
Bridge Sheet No.	Sheet 3 of 85

09-DEC-2002
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STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY		SUPER-STRUCT.	APPR. SLABS 1 &2	ABUT NO. 1	PIER NO.1	PIER NO. 2	PIER NO. 3	PIER NO. 4	ABUT. NO. 2	TEMP. DETOUR	BRIDGE PAINTING	EROSION CONTROL		FULL C.E.	TRAINING	BRIDGE
10																
21																
374																
30																
150		198	39							100						337
		455			1		2	1								459
			79													79
		50														50
		5280														5280
					130	660		200								990
				300	170		340	240	830							1880
				60	90		180	126	165							621
		127870	10540													138410
		1														1
										7980						7980
											1					1
											1					1
											1					1
		37		9	9	9	9	10	9							92
		111														111
		1460														1460
		832														832
		832														832
										570						570
		1														1
										1						1
										1						1
		1250														1250
		1														1
			61	3	1		2	1	7							75
		30														30
		20														20
				1	2	2		2								7
					1	1										2
					1		1	1								3
										1						1
20										40	80					120
					2			2								4
										20						20
160																

TOTALS

ROUND	GRAND TOTAL	FINAL
	10	
	21	
	374	
	30	
	487	
	459	
	79	
	50	
	5280	
	990	
	1880	
	621	
	138410	
	1	
	7980	
	1	
	1	
	1	
	92	
	111	
	1460	
	832	
	832	
	570	
	1	
	1	
	1	
	1250	
	1	
	75	
	30	
	20	
	7	
	2	
	3	
	1	
	140	
6	10	
	20	
	160	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
CY	COMMON EXCAVATION	203.15
CY	EXCAVATION OF SURFACES AND PAVEMENTS	203.28
SY	COLD PLANING-BIT.PAVEMENT	210.10
CY	SUBBASE OF GRAVEL	301.15
TON	BITUMINOUS CONCRETE PAVEMENT (PG 58-28)	406.25
CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33
CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
EACH	SHORING SUPERSTRUCTURE BEARINGS	502.11
LB	STRUCTURAL STEEL	506.60
LB	STRUCTURAL STEEL (BEARING SHIMS)	506.60
LB	REINFORCING STEEL	507.15
LF	DRILLING AND GROUTING DOWELS	507.16
LB	EPOXY COATED REINFORCING STEEL	507.17
LS	SHEAR CONNECTORS (4330 7/8" DIA x 7" STUDS)	508.15
SF	STEEL GRID FLOORING	509.20
LS	STRUCTURAL PAINTING,FIELD APPLIED (250 TON)	513.30
LS	CONTAINMENT & ENVIRON. PROTECTION,FIELD (250 TON)	513.36
LS	SURFACE PREPARATION, FIELD (250 TON)	513.41
GAL	WATER REPELLENT	514.10
LF	BRIDGE EXPANSION JOINT (VERMONT JOINT)	516.10
SY	SHEET MEMBRANE WATERPROOFING (MOD) (TORCH APPLIED)	519.20
LF	REMOVAL OF EXISTING RAILING	525.10
LF	BRIDGE RAILING-NETC 2 RAIL	525.33
LF	BRIDGE RAILING - HD STEEL BEAM / CURB MOUNTED (MOD 1) (H-PILE CURB)	525.40
LS	TRAFFIC PROTECTION FOR BRIDGE PROJECT	527.11
LS	TWO-WAY TEMPORARY BRIDGE (MOD 1) (SUBSTRUCTURES & APPROACH FILLS)	528.11
LS	TWO-WAY TEMPORARY BRIDGE (MOD 2) (STRUCTURAL STEEL)	528.11
SY	REMOVAL OF BRIDGE PAVEMENT	529.10
EACH	PARTIAL REMOVAL OF STRUCTURE	529.20
CY	REMOVAL OF CONCRETE OR MASONRY	529.25
EACH	BEARING DEVICE ASSEMBLY (PREFORMED)	531.10
EACH	BEARING DEVICE ASSEMBLY (PREFORMED PTFE)	531.10
SY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I	580.13
SY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II	580.14
CY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III	580.15
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25
HR	TRUCK-MOUNTED ATTENUATOR	608.45
CY	STONE FILL, TYPE I	613.10
CY	STONE FILL, TYPE I (MOD) (ROCK CHECK DAMS)	613.10
LF	CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B	616.28

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1(36)**

FILE NAME: **scan_qty.xls**
PROJECT LEADER: **S. FARNSWORTH**
DESIGNED BY: **R. PELLETT**
QUANTITY SHEET #1

PLOT DATE: **2/4/2003**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4** OF **85**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES																TOTALS			DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
ROADWAY		SUPER-STRUCT.	APPR. SLABS 1 &2	ABUT NO. 1	PIER NO.1	PIER NO. 2	PIER NO. 3	PIER NO. 4	ABUT. NO. 2	TEMP. DETOUR	BRIDGE PAINTING	EROSION CONTROL		FULL C.E.	TRAINING	BRIDGE	ROUND	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
										250						250		250		LF	WOVEN WIRE FENCE W/STEEL POSTS	620.25			
										2						2		2		EACH	STEEL BRACE FOR WOVEN WIRE FENCE	620.40			
										250						250		250		LF	REMOVAL OF EXISTING FENCE	620.55			
		360														360		360		LF	SNOW BARRIER - GALVANIZED	620.75			
										400						400		400		LF	STEEL BEAM GUARD RAIL	621.20			
161																		161		LF	HVY DUTY STEEL BEAM GUARD RAIL	621.21			
1										2						2		3		EACH	MANUFACTURED TERMINAL SECTION	621.505			
										2						2		2		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60			
4																		4		EACH	GUARD RAIL APPR. SECTION,NETC 2 RAIL	621.72			
317										180						180		497		LF	REMOVL AND DISP OF GUARD RAIL	621.80			
60										100						100		160		LF	TEMPORARY TRAFFIC BARRIER	621.90			
160										160	80					240		400		HR	UNIFORMED TRAFFIC OFFICERS	630.10			
100										100	200					300		400		HR	FLAGGERS	630.15			
														1				1		LS	FIELD OFFICE-ENGINEERS	631.10			
														1				1		LS	TESTING EQUIPMENT - CONCRETE	631.16			
														1				1		LS	TESTING EQUIPMENT - BITUMINOUS	631.17			
														1				1		LS	TESTING EQUIPMENT - PROTECTIVE COATINGS	631.18			
														1				1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25			
															520			520		HR	EMPLOYEE TRAINEESHIP	634.10			
																1		1		LS	MOBILIZATION	635.10			
1																		1		LS	TRAFFIC CONTROL (INTERSTATE 91)	641.10			
1																		1		LS	TRAFFIC CONTROL (US 5)	641.10			
										1						1		1		LS	TRAFFIC CONTROL (TEMPORARY BRIDGE STEEL ERECTION)	641.10			
											1					1		1		LS	TRAFFIC CONTROL (BRIDGE PAINTING)	641.10			
2																		2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15			
1600																		1600		LF	DURABLE 4" WHITE LINE	646.40			
1600																		1600		LF	DURABLE 4" YELLOW LINE	646.41			
										2000						2000		2000		LF	TEMPORARY 4" WHITE LINE	646.60			
										2000						2000		2000		LF	TEMPORARY 4" YELLOW LINE	646.61			
										15						15		15		LF	TEMPORARY 24" STOP BAR	646.66			
180																		180		SF	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85			
										100						100		100		SY	GEOTEXTILE UNDER STONE FILL	649.31			
												290						290		SY	GEOTEXTILE FOR SILT FENCE	649.51			
40												70						110		LB	SEED	651.15			
												10						10		LB	SEED-WINTER RYE	651.17			
100												400						500		LB	FERTILIZER	651.18			
2												2						4		TON	AGRICULTURAL LIMESTONE	651.20			
1												2						3		TON	HAY MULCH	651.25			
												10						10		EACH	HAY BALES FOR EROSION CONTROL	651.26			
50																		50		CY	TOPSOIL	651.35			

PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1(36)**

FILE NAME: **scan_qty.xls**
PROJECT LEADER: **S. FARNSWORTH**
DESIGNED BY: **R. PELLETT**
QUANTITY SHEET #2

PLOT DATE: **2/4/2003**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4 A** OF **85**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY		SUPER-STRUCT.	APPR. SLABS 1 &2	ABUT. NO. 1	PIER NO.1	PIER NO. 2	PIER NO. 3	PIER NO. 4	ABUT. NO. 2	TEMP. DETOUR	BRIDGE PAINTING	EROSION CONTROL		FULL C.E.	TRAINING	BRIDGE
20												40				
100																
4																
4																

TOTALS

ROUND	GRAND TOTAL	FINAL
	60	
	100	
	4	
	4	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
SY	EROSION MATTING	654.10
LB	FLANGED CHANNEL SIGN POSTS	675.30
EACH	REMOVING SIGNS	675.50
EACH	ERECTING SALVAGED SIGNS	675.60

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1(36)**

FILE NAME: **scan_qty.xls**
PROJECT LEADER: **S. FARNSWORTH**
DESIGNED BY: **R. PELLETT**
QUANTITY SHEET #3

PLOT DATE: **2/4/2003**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4 B** OF **85**

GPS CONTROL POINTS

HVCTRL #1

STANDARD DISK STAMPED
EASY
N = 387983.4500
E = 1670810.0100
ELEV= 486.680

GENERAL LOCATION, HARTLAND, VERMONT. TO REACH FROM THE INTERSECTION OF INTERSTATE 91 AND THE INTERSTATE 91 EXIT 9 NORTH BOUND ON RAMP IN HARTLAND GO NORTH ALONG INTERSTATE 91 FOR 2.8 MI (4.5 KM) TO THE SITE OF THE MARK ON THE LEFT, SET IN THE MEDIAN BETWEEN INTERSTATE 91 NORTH AND SOUTH BOUND LANES. THE MARK IS SET FLUSH IN THE TOP OF A 30 CM ROUND CONCRETE MONUMENT POURED 1.3M (4.3 FT) DEEP.

THE MARK IS LOCATED 12.0 M (39.4 FT) WEST OF AND ABOUT 2.0 M (6.6 FT) HIGHER THAN THE WEST EDGE OF PAVEMENT OF THE NORTH BOUND LANE OF INTERSTATE 91, 16.4 M (53.8 FT) EAST OF AND ABOUT LEVEL WITH THE EAST EDGE OF PAVEMENT OF THE SOUTH BOUND LANE OF INTERSTATE 91, 56.1M (184.1FT) SOUTH OF A 1.2 M (3.9 FT) X 1.2 M (3.9 FT) DROP INLET, AND 0.4 M (1.3 FT) EAST OF A FIBERGLASS WITNESS POST.

HVCTRL #10

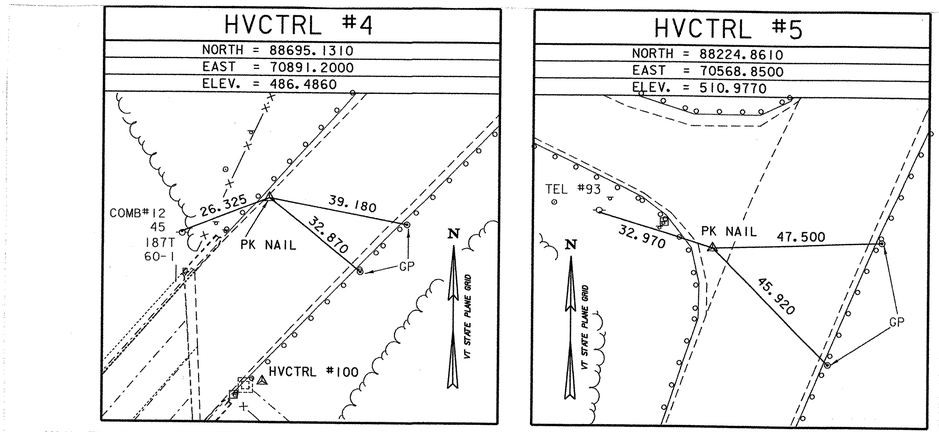
STANDARD DISK STAMPED
EASY AZ MK
N = 389147.9300
E = 1670717.7200
ELEV= 460.500

GENERAL LOCATION, HARTLAND, VERMONT. TO REACH FROM THE INTERSECTION OF INTERSTATE 91 AND THE INTERSTATE 91 EXIT 9 NORTH BOUND ON RAMP IN HARTLAND GO NORTH ALONG INTERSTATE 91 FOR 3.05 MI (4.91KM) TO THE MARK ON THE LEFT, SET IN THE NORTHEAST CORNER OF A 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE BASE FOR A DROP INLET.

THE MARK IS LOCATED 13.0 M (42.7 FT) EAST OF AND ABOUT 2.5 M (8.2 FT) LOWER THAN THE EAST EDGE OF PAVEMENT OF THE INTERSTATE 91 SOUTH BOUND LANE, 6.0 M (19.7 FT) WEST OF AND ABOUT 2.0 M (6.6 FT) LOWER THAN THE WEST EDGE OF PAVEMENT OF THE INTERSTATE 91 NORTH BOUND LANE, 0.2 M (0.7 FT) SOUTH OF THE NORTH EDGE OF THE 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE PAD, 1.0 M (3.3 FT) NORTH OF THE SOUTH EDGE OF THE 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE PAD, AND 0.55 M (1.80 FT) WEST OF A FIBERGLASS WITNESS POST.

*TO ALLOW THE STATE PLANE COORDINATES TO FIT THE AGENCY DESIGN PLANE, SUBTRACT 300000 FROM THE NORTHING AND SUBTRACT 1600000 FROM THE EASTING.
*DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT.

TRANSVERSE TIES



* MAIN TRAVERSE COMPLETED: JUNE 9, 2000 BY: R. GILMAN PC/ R. BULLOCK

ALIGNMENT COORDINATES

	NORTHING	EASTING	ELEVATION
ℳ POT STA 421+95.05	88724.72	70939.54	482.33
ℳ PC STA 422+24.807	88703.41	70918.77	484.35
ℳ POC STA 427+69.44	88257.97	70609.77	509.15

NOTES:

1. THE ELEVATIONS GIVEN FOR THE ALIGNMENT COORDINATES REFLECT THE EXISTING CONDITIONS BASED ON THE SURVEY PERFORMED ON JUNE 21, 2000.
2. ALL DIMENSIONS GIVEN ON THIS SHEET ARE IN FEET UNLESS OTHERWISE NOTED.

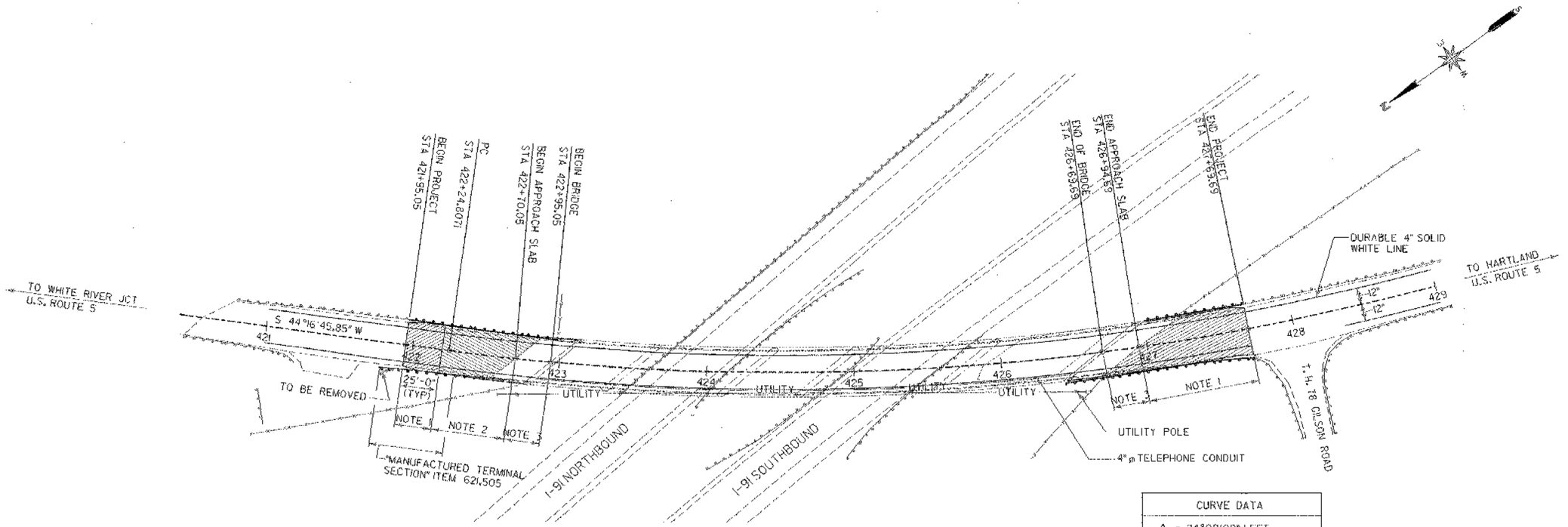
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD-83(96)
ADJUSTMENT	NONE

09-DEC-2002
v:\Struc\working\za272tie.dgn

STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
TIE SHEET	
Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272tie.dgn	
Bridge Sheet No.	Sheet 5 of 85



CURVE DATA
△ = 24°00'00" LEFT
R = 1637.0223'
T = 347.9598'
L = 685.7143'
E = 36.5721'
BANK = 0.057

NOTES:

1. COLD PLANE BIT. PAVEMENT AND PLACE BIT. CONCRETE SURFACE COURSE.
2. PLACE BIT. CONCRETE SURFACE AND BIT. CONCRETE BASE COURSE OVER EXISTING BIT. CONCRETE.
3. PLACE BIT. CONCRETE SURFACE AND BIT. CONCRETE BASE COURSE OVER NEW CONCRETE APPROACH SLAB. SEE SHEET 27.
4. NOT USED.
5. FILL SLOPES ARE 1-2 (VERT-HORZ)
6. DURABLE 4" DOUBLE YELLOW LINE IS COINCIDENT WITH CONSTRUCTION BASELINE.

SCALE 1" = 40'-0

40 0 40

ITEM 210.10
COLD PLANING-BIT. PAVEMENT
STA 421+95 TO 422+20
STA 426+95 TO 427+69

ITEM 621.80
REMOVAL AND DISPOSAL OF GUARD RAIL
421+~~95~~18 LT TO 422+99 LT
427+30 LT TO ~~427+69~~ LT 428+53
421+~~95~~80 RT TO 422+67 RT
426+67 RT TO 427+69 RT
426+54 TH 8 COMPLETE REMOVAL

ITEM 646.40
DURABLE 4" WHITE LINE
STA 421+00 LT TO 429+00 LT
STA 421+00 RT TO 429+00 RT

ITEM 646.41
DURABLE 4" YELLOW LINE
STA 421+00 TO 429+00

ITEM 203.28
EXCAVATION OF SURFACES AND PAVEMENTS
STA 422+20 TO 422+70

ITEM 621.21
HEAVY DUTY STEEL BEAM GUARD RAIL (WITH STEEL POSTS)
STA 421+95 LT TO 422+69 LT
STA 427+~~61~~60 LT TO 427+~~69~~85 LT
STA 422+~~30~~14 RT TO 422+~~38~~39 RT
STA ~~426+98 RT TO 427+69 RT~~
422+45 TO 422+70

ITEM 651.15, 651.18, 651.20, 651.25, 651.35
SEED, FERTILIZER, HAY MULCH LIMESTONE AND TOP SOIL (6")
STA 421+95 TO 423+40
STA 426+45 TO 427+69

ITEM 616.28 616.21 VERTICLE GRANITE CURB
~~CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B~~
STA 422+59 LT TO 422+99 LT
STA 427+31 LT TO 427+71 LT
STA 422+27 RT TO 422+67 RT
STA 426+68 RT TO 427+08 RT

ITEM 621.505
MANUFACTURED TERMINAL SECTION
STA 421+~~80~~75 RT TO 422+~~30~~15 RT
STA 426+97 RT TO 427+47 RT

ITEM 621.72
GUARDRAIL APPROACH SECTION, NETC2 RAIL (MOD)
STA 422+69 LT TO 422+99 LT
STA 427+31 LT TO 427+61 LT
STA 422+38 RT TO 422+67 RT
STA 426+68 RT TO 426+98 RT

ITEM 646.85
REMOVAL OF EXISTING PAVEMENT MARKINGS
STA 425+09 TO 426+69
STA 421+85 TO 422+95

ITEM 675.50
REMOVING SIGNS
SIGN OM-3, QTY=4

ITEM 675.30
FLANGED CHANNEL SIGN POST
SIGN POST FOR OM-3,
QTY = 4 @ 25 LBS EA = 100 LBS

ITEM 675.60
ERECTING SALVAGED SIGNS
SIGN OM-3, QTY=4

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD-83(96)

STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

LAYOUT SHEET

Designed By J. BARRACK	Drawn By N. HERRERA
Checked By J. BARRACK Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272lay.dgn	
Bridge Sheet No.	Sheet 6 of 85

04-FEB-2002

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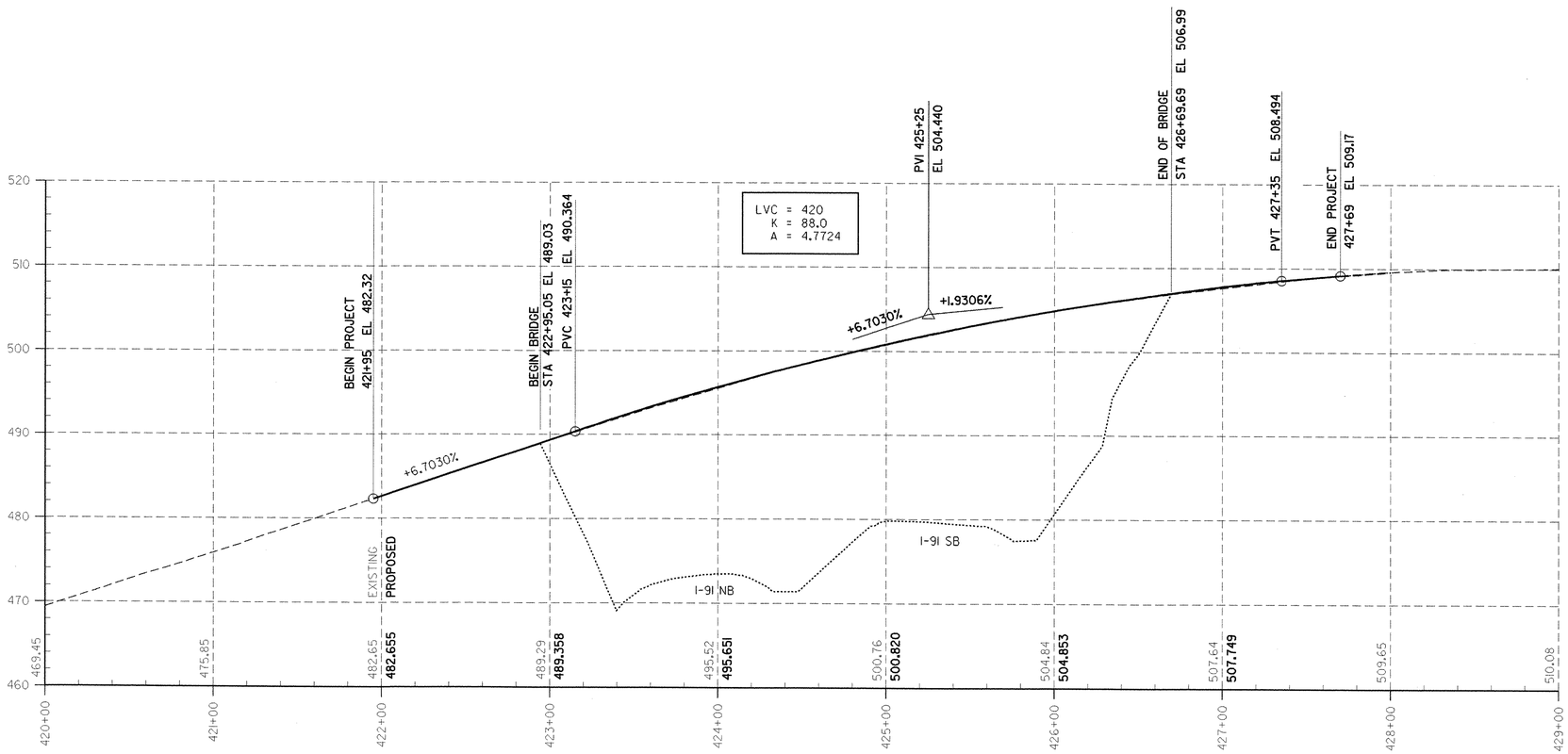


PROFILE

VERTICAL 10 0
HORIZONTAL 0 20 40 60
SCALE IN FEET

09-DEC-2002

v:\Civil\working\za272prl.dgn

DATUM

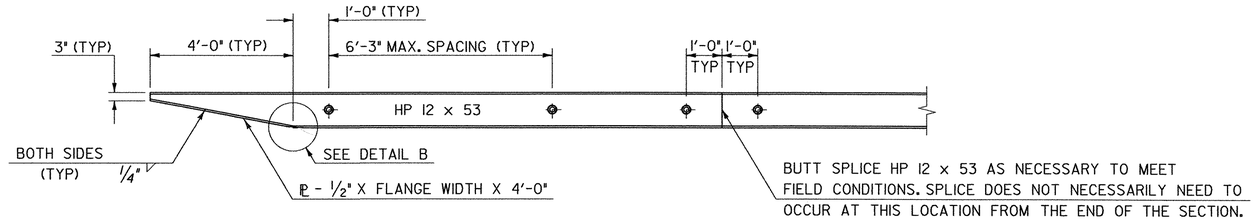
VERTICAL NAVD 88

HORIZONTAL NAD-83(96)

STONE & WEBSTER, INC.

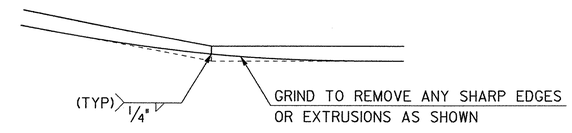
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
US 5 PROFILE	
Designed By J. BARRACK	Drawn By K. PRM-TAN
Checked By J. BARRACK Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272prl.dgn	
Bridge Sheet No.	Sheet 7 of 85



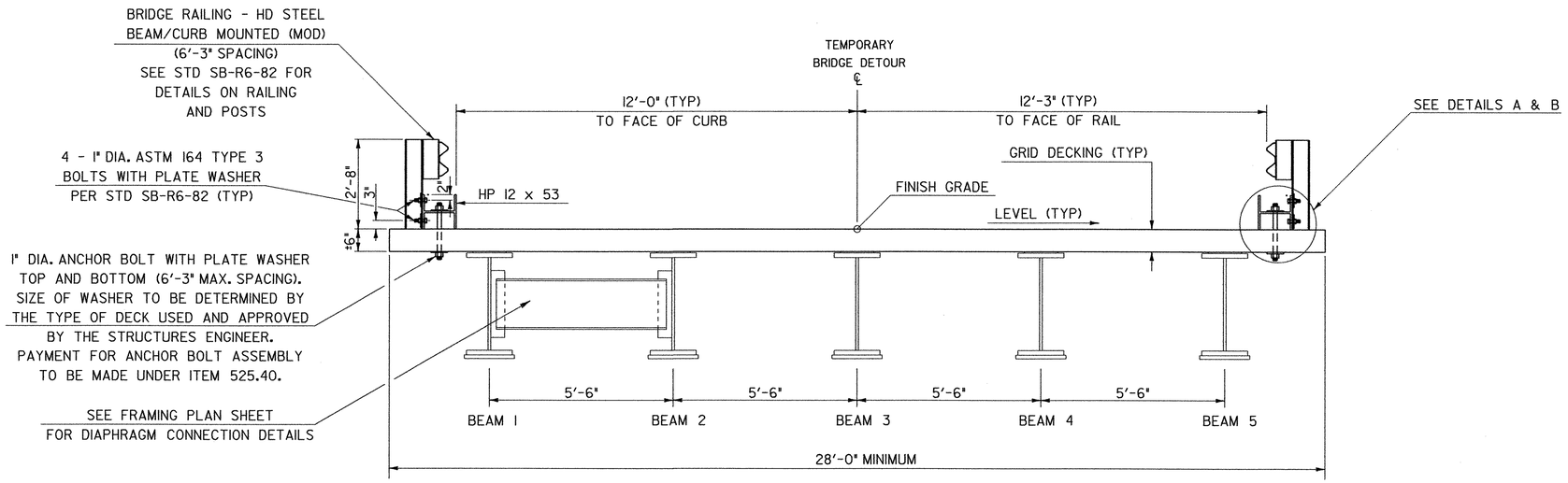
DETAIL A

SCALE: 1/2" = 1'-0"



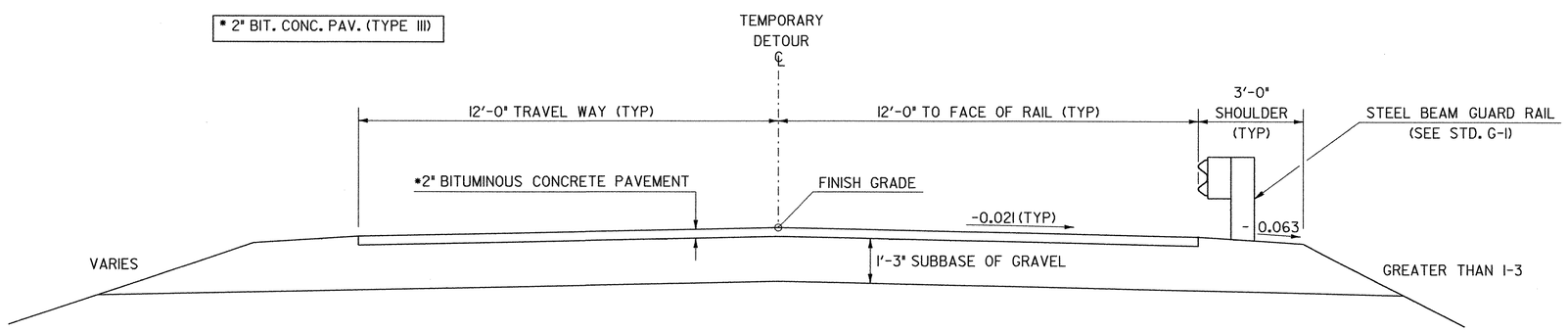
DETAIL B

N.T.S.



TEMPORARY BRIDGE TYPICAL

SCALE: 1/2" = 1'-0"



TEMPORARY ROADWAY TYPICAL

SCALE: 1/2" = 1'-0"

NOTES

1.) SEE PROJECT SPECIAL PROVISIONS FOR A LISTING OF THE MATERIALS BEING SUPPLIED BY THE STATE.

2.) HP 12 x 53 TO BE PAID AS ITEM 525.40, "BRIDGE RAILING - HD STEEL BEAM CURB MOUNTED (MOD-1) (H-PILE CURB).

3.) GUARDRAIL AND SUBBASE OF GRAVEL SHALL BE INCLUDED IN ITEM 528.11 "TWO WAY TEMPORARY BRIDGE (MOD 1) (SUBSTRUCTURES AND APPROACH FILLS)

TEMP. DETOUR - BRIDGE AND ROADWAY TYPICALS

PROJECT NAME: HARTLAND
PROJECT NUMBER: IM 091-1(36)

FILE NAME: str7/99a272/sa272typ.dgn
PROJECT LEADER: S. FARNSWORTH
DESIGNED BY: FOWLER/UPMAL
sa272typ.I

PLOT DATE: 05-FEB-2003
DRAWN BY: K. UPMAL
CHECKED BY: M. FOWLER
SHEET 8 OF 85

ITEM 621.80 REMOVAL AND DISPOSAL OF GUARD RAIL

NORTHBOUND
STA. 3368+~~80~~68 - 3369+05 LT
STA. 3369+22.5 - 3369+35 RT
SOUTHBOUND
75STA. 3368+~~87~~ - 3369+~~52~~ RT50
3367+92.5STA. ~~3368+05~~ - 3368+~~70~~ LT67.5

MAINLINE STATION 420+00.00 =
TEMPORARY DETOUR STATION 100+00.00

STATION 101+00.00
BEGIN TEMPORARY DETOUR

ITEM 621.20 STEEL BEAM GUARD RAIL
(EXTEND EXISTING INTERSTATE GUARD RAIL)

NORTHBOUND
STA. 3369+35 - 3370+97.50 RT
STA. 3368+~~80~~68 - ~~3370+05~~ LT3369+45
SOUTHBOUND
STA. 3368+~~87~~75 - ~~3370+12~~ RT3373+50
STA. 3368+05 - 3369+17.50 LT
STA. 3368+87 - 3373+87 LT

ITEM 621.60 ANCHOR FOR STEEL BEAM RAIL

STA. 3370+91.50 RT
STA. 3369+99 LT
STA. 3370+06 RT
STA. 3369+11.50 LT

CURVE #2 DATA
△ = 44°-17'-23.23" LT
D = 40°-55'-32.00"
R = 140.00
T = 56.98
L = 108.22
E = 10.33
BANK = NORMAL CROWN

*** NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR MEDIAN SPAN 3 AND APPROACH SPANS

VT STATE PLANE GRID

STATION 102+98.00
CENTERLINE BEARING
SPAN 1 - ABUTMENT #1
***

STATION 103+95.00
CENTERLINE BEARING
SPAN 1 - ABUTMENT #2
***

STATION 104+45.00
CENTERLINE BEARING
SPAN 2 - ABUTMENT #3
***

MAINLINE PC
Sta 422+24.77

U.S. ROUTE 5
TO WHITE RIVER JCT.

S44° 16' 45.90"W

INTERSTATE 91 R.O.W.

POB
STA 100+00.00

PI #1
STA 101+26.04

PC
STA 101+85.45

PT
STA 102+93.67

PC
STA 100+81.55

PT
STA 101+67.71

S19° 32' 30.10"W

S35° 15' 06.72"W

TRUCKS ENTERING

BENCH MARK
191 (122)
ELEV=469.82

BRIDGE
38
191

FENCE
PIPE
WOODS
GUIDE POST
HVCTRL
SUB TEL
SIGN SUBT
GUY WIRE
TEL M.H.
COMB 187/152 SUBTEL
GUY

100+00
420+00
421+00
101+00
422+00
423+00
424+00
102+00
103+00
104+00
105

3368
3369
3370
3371

MATCH LINE
STATION 105+00
MATCH LINE

CURVE #1 DATA
△ = 35°-15'-44.18" RT
D = 40°-55'-32.00"
R = 140.00
T = 44.49
L = 86.16
E = 6.58
BANK = NORMAL CROWN

SILT FENCE

SILT FENCE 10'

CHECK DAMS AS DIRECTED BY THE RESIDENT ENGINEER

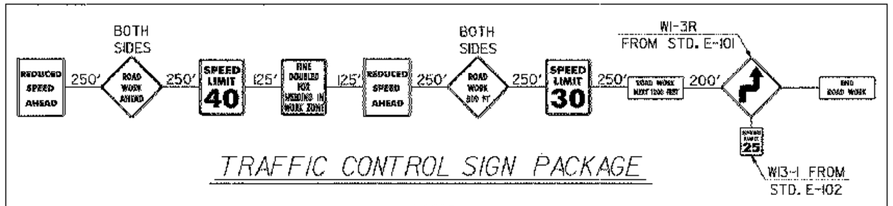
MANUFACTURED TERMINAL SECTION

MANUFACTURED TERMINAL SECTION

△ TEMP. DETOUR PI #2 STA 102+42.43 =
MAINLINE STATION 422+23.38 (68.82 RT)

NORTHBOUND INTERSTATE 91

SOUTHBOUND INTERSTATE 91



TRAFFIC CONTROL SIGN PACKAGE

NOTES

1) REFER TO STANDARD E-100 FOR CONSTRUCTION APPROACH SIGNS CRITERIA

2) ALL SIGNS ARE TO BE LOCATED ON THE RIGHT SIDE OF THE ROAD APPROACHING THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED

3) THE LAST SIGN APPROACHING THE CONSTRUCTION AREA ON THE NORTH SIDE OF THE TEMPORARY DETOUR IS TO BE PLACED IMMEDIATELY OFF THE NORTH END OF THE RAILROAD UNDERPASS. ALL OTHER SIGNS IN THE SIGN PACKAGE ARE TO PRECEED

0 20 40
SCALE 1:20 IN FEET

TEMP. DETOUR PLAN - SHEET 1 OF 2

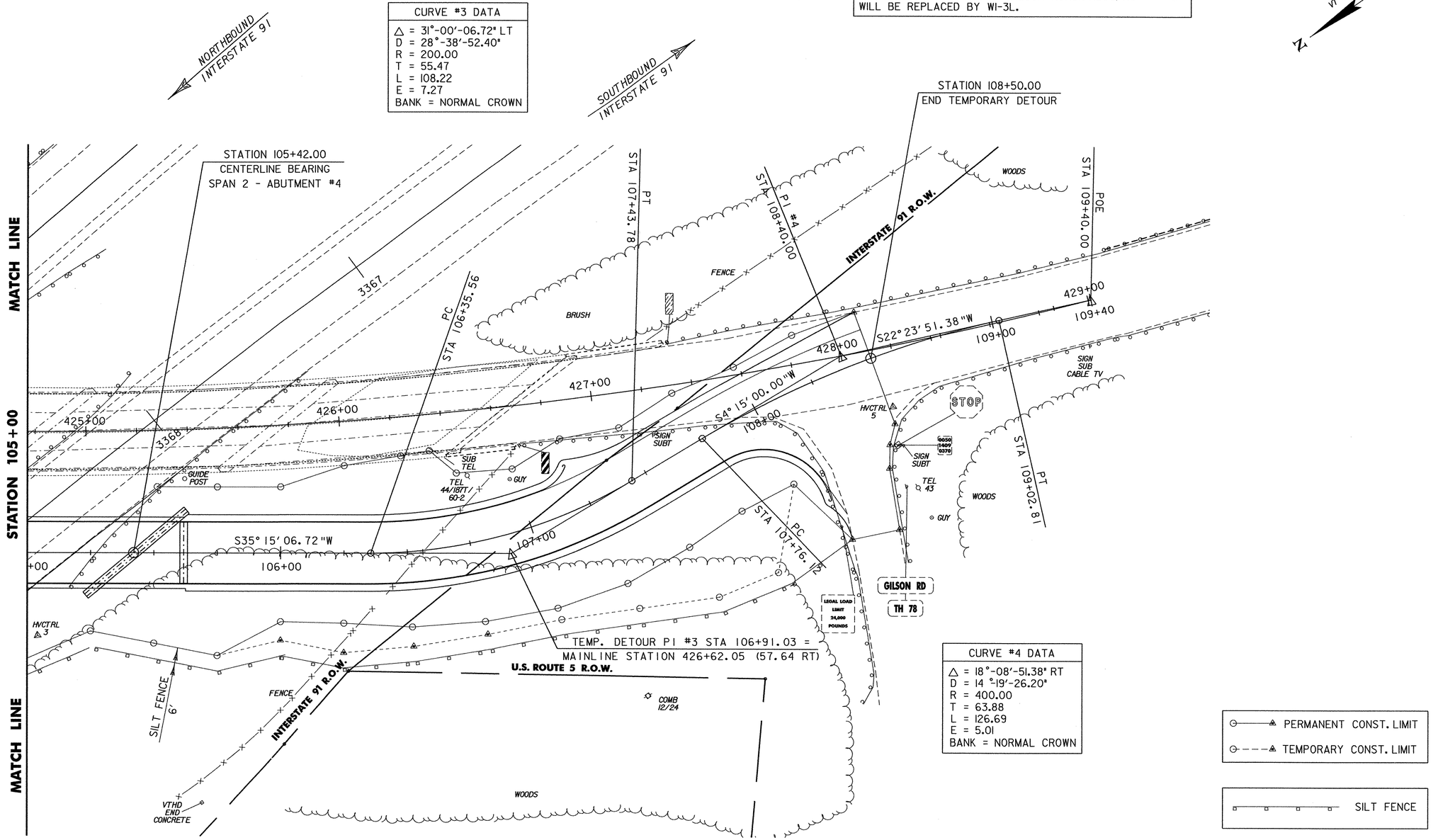
PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)
FILE NAME:	str7/99a272/sa272bdr.dgn
PROJECT LEADER:	S. FARNSWORTH
DESIGNED BY:	K. UPMAL
SA272PLLI	
PLOT DATE:	03-FEB-2003
DRAWN BY:	K. UPMAL
CHECKED BY:	
SHEET 9	OF 85

*** NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR APPROACH SPAN

REFER TO SHEET 9 FOR THE TEMPORARY TRAFFIC CONTROL SIGN PACKAGE. THE SOUTHERN APPROACH WILL CONSIST OF THE SAME SIGNS ENDING 200' FROM THE INTERSECTION OF U.S. ROUTE 5 AND T.H. 78 (GILSON ROAD). ALSO, NOTE WI-3R WILL BE REPLACED BY WI-3L.

VT STATE PLANE GRID

CURVE #3 DATA
△ = 31°-00'-06.72" LT
D = 28°-38'-52.40"
R = 200.00
T = 55.47
L = 108.22
E = 7.27
BANK = NORMAL CROWN



CURVE #4 DATA
△ = 18°-08'-51.38" RT
D = 14°-19'-26.20"
R = 400.00
T = 63.88
L = 126.69
E = 5.01
BANK = NORMAL CROWN

PERMANENT CONST. LIMIT

TEMPORARY CONST. LIMIT

SILT FENCE

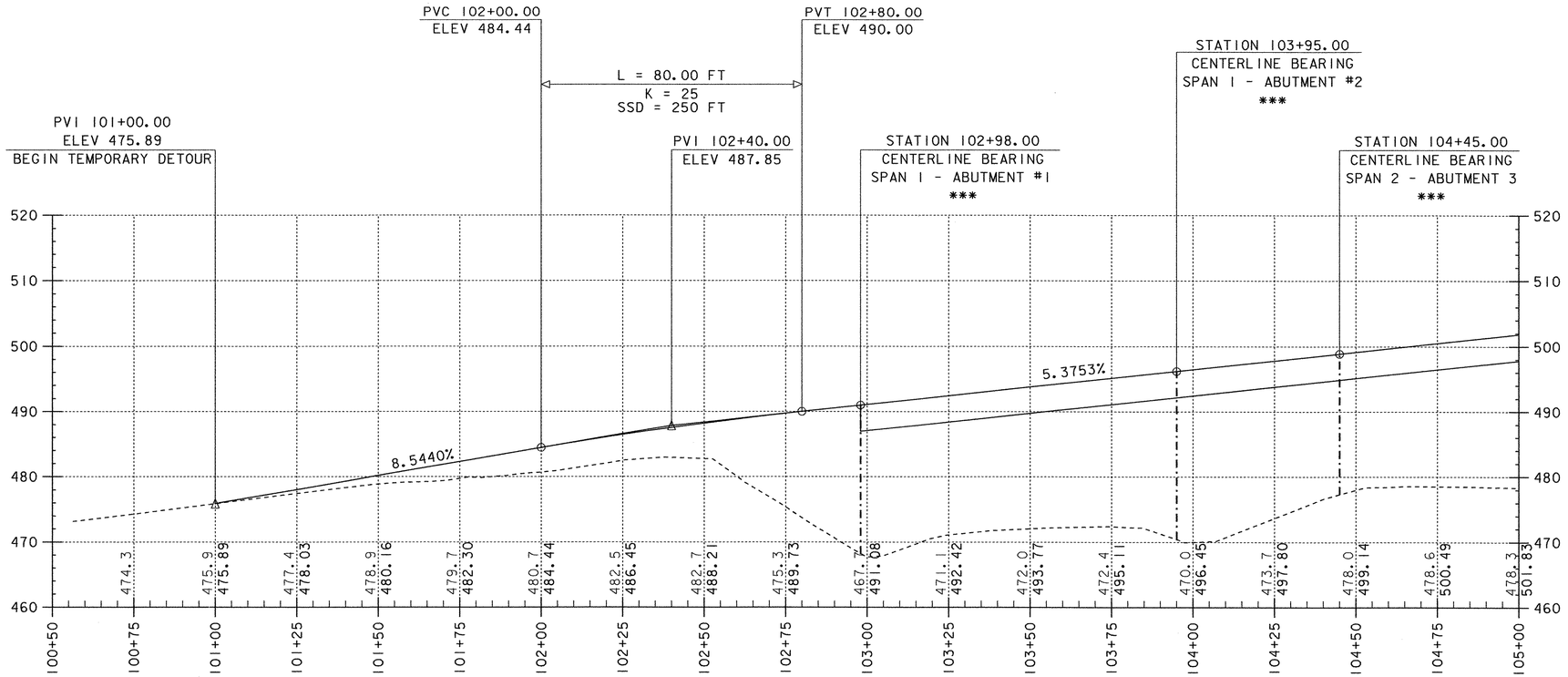
0 20 40

SCALE 1:20 IN FEET

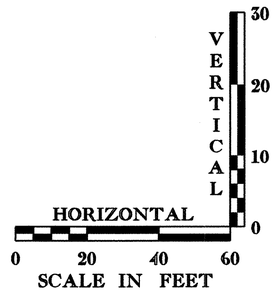
TEMP. DETOUR PLAN – SHEET 2 OF 2

PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)
FILE NAME: str7/99a272/sa272bdr.dgn	PLOT DATE: 03-FEB-2003
PROJECT LEADER: S. FARNSWORTH	DRAWN BY: K. UPMAL
DESIGNED BY: K. UPMAL	CHECKED BY:
SA272PL2.1	SHEET 10 OF 85

***NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR MEDIAN SPAN 3 AND APPROACH SPANS



TEMPORARY DETOUR PROFILE



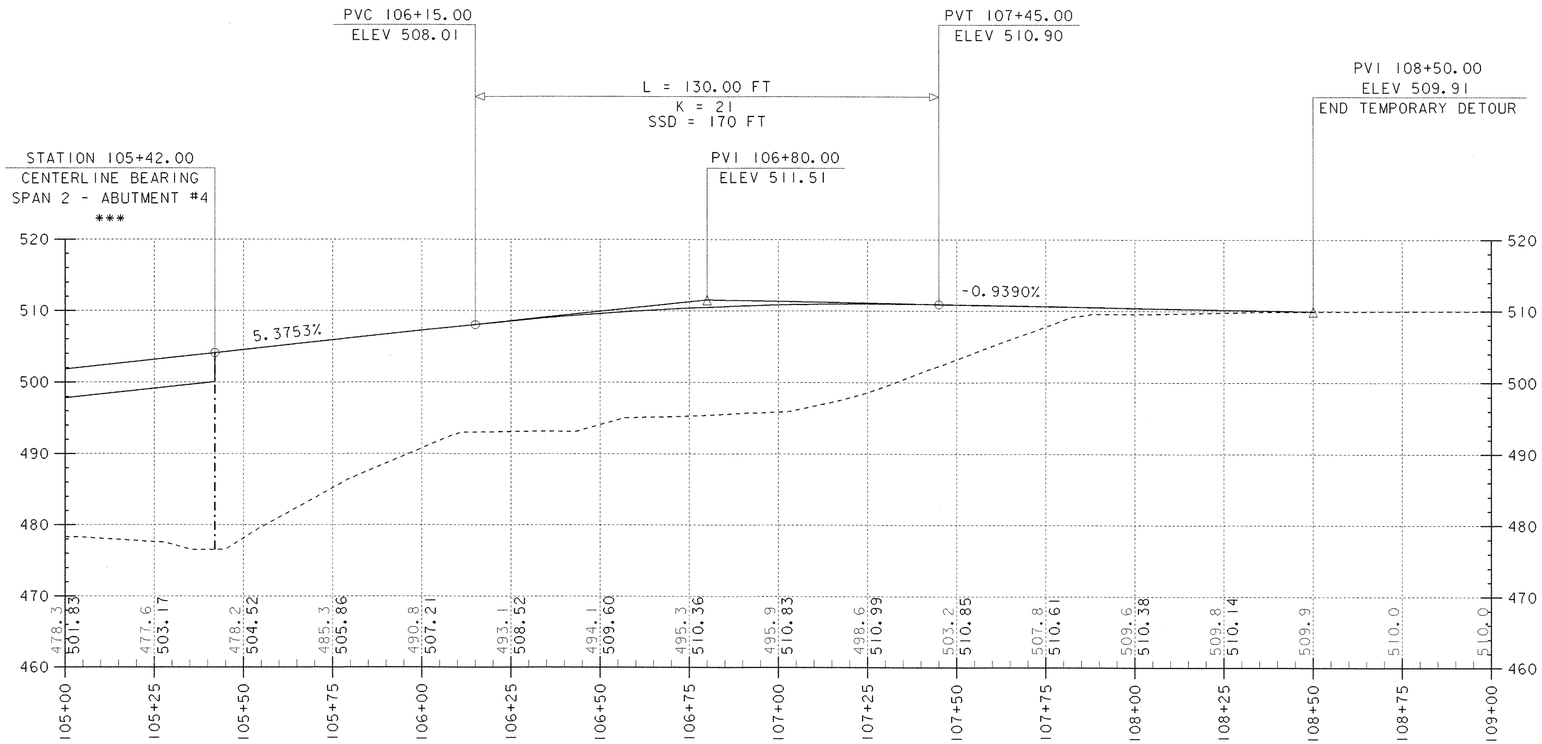
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE OLD GROUND ALONG THE CENTERLINE. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

TEMP. DETOUR PROFILE - SHEET 1 OF 2

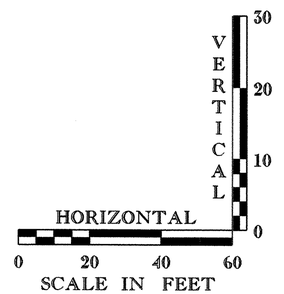
PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

FILE NAME:	str7/99a272/sa272xs.dgn	PLOT DATE:	26-FEB-2003
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	K. UPMAL	CHECKED BY:	
sa272pr1.1		SHEET 11	OF 85

***NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR MEDIAN SPAN 3 AND APPROACH SPANS



TEMPORARY DETOUR PROFILE

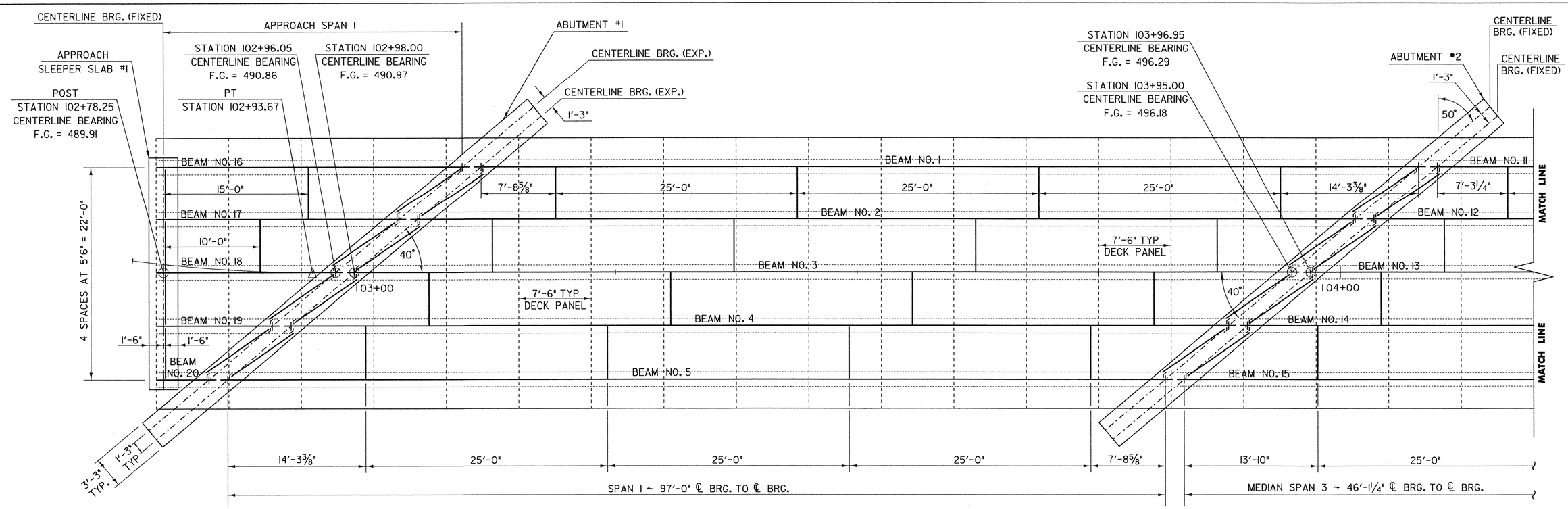


TEMP. DETOUR PROFILE – SHEET 2 OF 2

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE OLD GROUND ALONG THE CENTERLINE. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

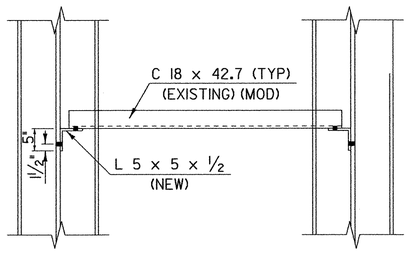
PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

FILE NAME:	str7/99a272/sa272xs.dgn	PLOT DATE:	24-DEC-2002
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	K. UPMAL	CHECKED BY:	
sa272pr2.1		SHEET IIA	OF 85



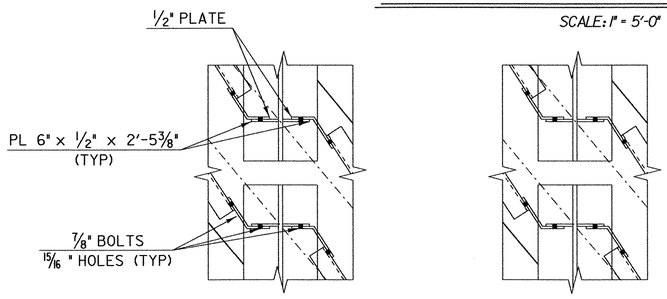
TEMPORARY DETOUR FRAMING PLAN

SCALE: 1" = 5'-0"



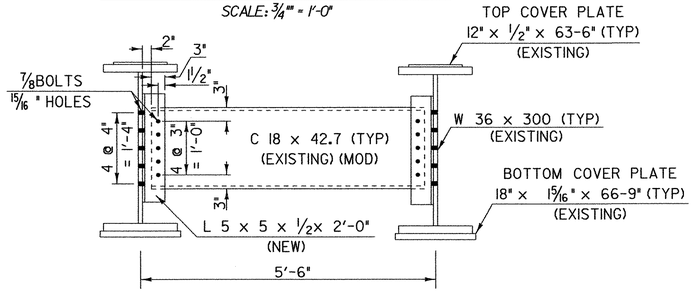
INTERIOR DIAPRAGM PLAN

SCALE: 3/4" = 1'-0"



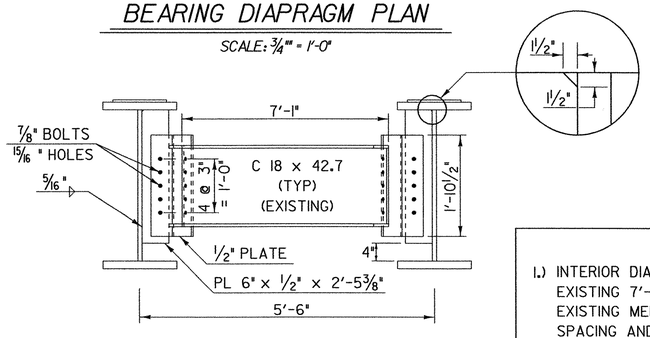
BEARING DIAPRAGM PLAN

SCALE: 3/4" = 1'-0"



INTERIOR DIAPHRAGM PROFILE

SCALE: 3/4" = 1'-0"



BEARING DIAPHRAGM PROFILE

SCALE: 3/4" = 1'-0"

BEAM NO.	LOCATION	STATION	LENGTH (℄ BRG. - ℄ BRG.)	TOTAL LENGTH
1	SPAN 1	103+11.10 - 104+08.10 LT	97.00 (97'-0")	98.50 (98'-6")
2	SPAN 1	103+04.55 - 104+01.55 LT	97.00 (97'-0")	98.50 (98'-6")
3	SPAN 1	102+98.00 - 103+95.00 C/L	97.00 (97'-0")	98.50 (98'-6")
4	SPAN 1	102+91.45 - 103+88.45 RT	97.00 (97'-0")	98.50 (98'-6")
5	SPAN 1	102+84.90 - 103+81.90 RT	97.00 (97'-0")	98.50 (98'-6")
11	SPAN 3	104+10.05 - 104+56.15 LT	46.10 (46'-1 1/4")	47.60 (47'-7 1/4")
12	SPAN 3	104+03.50 - 104+49.50 LT	46.10 (46'-1 1/4")	47.60 (47'-7 1/4")
13	SPAN 3	103+96.95 - 104+43.05 C/L	46.10 (46'-1 1/4")	47.60 (47'-7 1/4")
14	SPAN 3	103+90.40 - 104+36.50 RT	46.10 (46'-1 1/4")	47.60 (47'-7 1/4")
15	SPAN 3	103+83.85 - 104+29.95 RT	46.10 (46'-1 1/4")	47.60 (47'-7 1/4")
16	SPAN 4	*102+78.25 - 103+09.15 LT	30.90 (30'-10 3/4")	32.40 (32'-4 3/4")
17	SPAN 4	*102+78.25 - 103+02.60 LT	24.35 (24'-4 1/4")	25.85 (25'-10 1/4")
18	SPAN 4	*102+78.25 - 102+96.05 C/L	17.80 (17'-9 5/8")	19.30 (19'-3 5/8")
19	SPAN 4	*102+78.25 - 102+89.50 RT	11.25 (11'-3")	12.75 (12'-9")
20	SPAN 4	*102+78.25 - 102+82.95 RT	4.70 (4'-8 1/2")	6.20 (6'-2 3/8")

*NOTE: STATIONS MEASURED BACK ALONG TANGENT

NOTES

1.) INTERIOR DIAPHRGMS ARE TO BE MODIFIED FROM EXISTING 7'-I" CHANNEL SECTIONS BY CUTTING EXISTING MEMBERS TO ACCOMODATE NEW 5'-6" BEAM SPACING AND DRILLING NEW BOLT HOLES ON CUT END

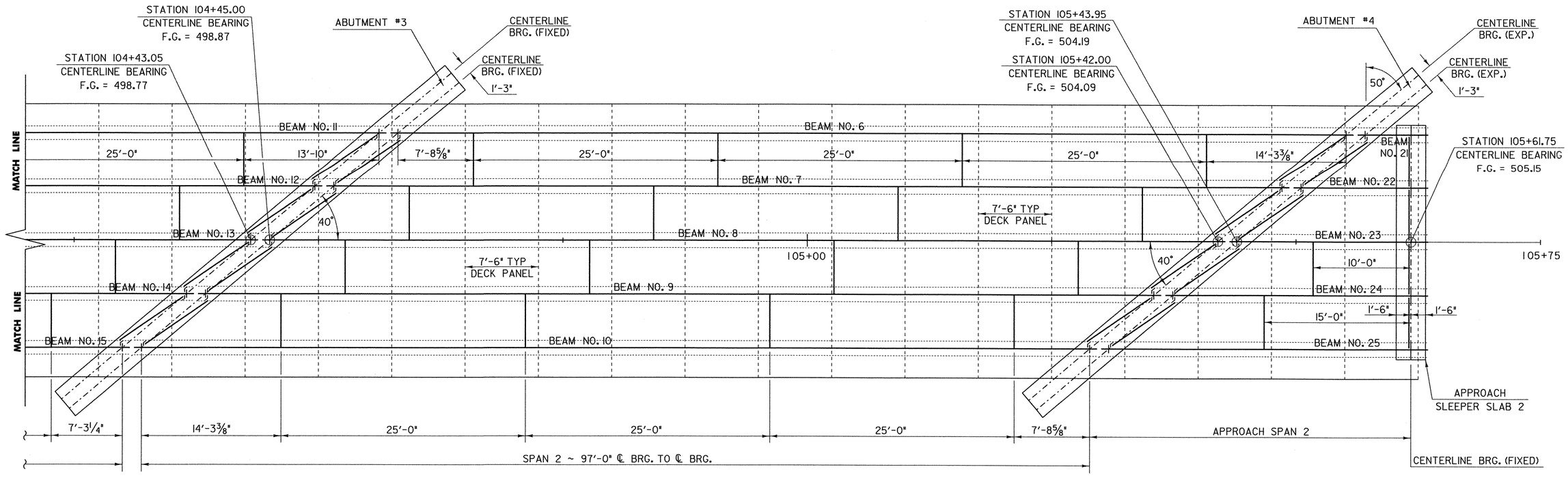
2.) ALL BOLTS SHALL BE "HIGH STRENGTH BOLTS CONFORMING WITH AASHTO MI64-TYPE 3 BOLTS

TEMP. BRIDGE FRAMING PLAN – SHEET 1 OF 2

PROJECT NAME: HARTLAND
PROJECT NUMBER: IM 091-1(36)

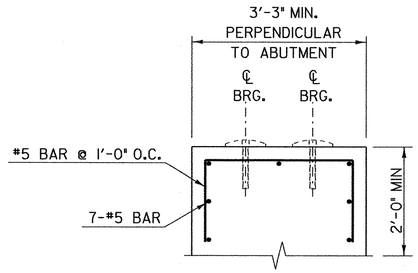
FILE NAME: /99a272/str/sa272fra.dgn
PROJECT LEADER: S. FARNSWORTH
DESIGNED BY: FOWLER/UPMAL
sa272fr1.1

PLOT DATE: 03-FEB-2003
DRAWN BY: K. UPMAL
CHECKED BY: M. FOWLER
SHEET IIB OF 85



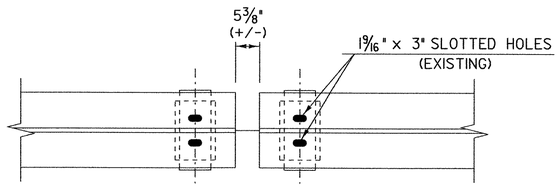
TEMPORARY DETOUR FRAMING PLAN

SCALE: 1" = 5'-0"



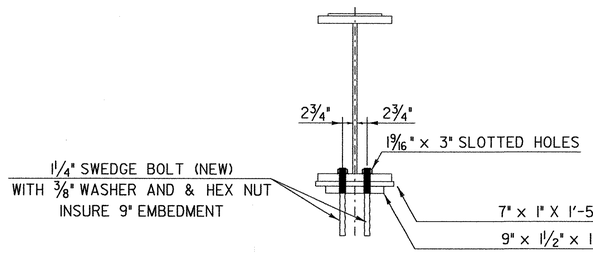
TYPICAL ABUTMENT / PIER CAP

SCALE: ¾" = 1'-0"



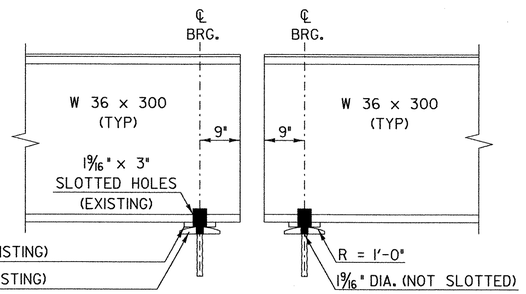
TYPICAL BEARING PLAN

SCALE: ¾" = 1'-0"



TYPICAL BEARING SECTION

SCALE: ¾" = 1'-0"



TYPICAL BEARING PROFILE

SCALE: ¾" = 1'-0"

BEAM NO.	LOCATION	STATION	LENGTH (℄ BRG. - ℄ BRG.)	TOTAL LENGTH
6	SPAN 2	104+58.10 - 105+55.10 LT	97.00 (97'-0")	98.50 (98'-6")
7	SPAN 2	104+51.55 - 105+48.55 LT	97.00 (97'-0")	98.50 (98'-6")
8	SPAN 2	104+45.00 - 105+42.00 C/L	97.00 (97'-0")	98.50 (98'-6")
9	SPAN 2	104+38.45 - 105+35.45 RT	97.00 (97'-0")	98.50 (98'-6")
10	SPAN 2	104+31.90 - 105+28.90 RT	97.00 (97'-0")	98.50 (98'-6")
11	SPAN 3	104+10.05 - 104+56.15 LT	46.10 (46'-1¼")	47.60 (47'-7¼")
12	SPAN 3	104+03.50 - 104+49.50 LT	46.10 (46'-1¼")	47.60 (47'-7¼")
13	SPAN 3	103+96.95 - 104+43.05 C/L	46.10 (46'-1¼")	47.60 (47'-7¼")
14	SPAN 3	103+90.40 - 104+36.50 RT	46.10 (46'-1¼")	47.60 (47'-7¼")
15	SPAN 3	103+83.85 - 104+29.95 RT	46.10 (46'-1¼")	47.60 (47'-7¼")
21	SPAN 5	105+57.05 - 105+61.75 LT	4.70 (4'-8½")	**7.20 (7'-2⅜")
22	SPAN 5	105+50.50 - 105+61.75 LT	11.25 (11'-3")	**13.75 (13'-9")
23	SPAN 5	105+43.95 - 105+61.75 C/L	17.80 (17'-9⅝")	**20.30 (20'-3⅝")
24	SPAN 5	105+37.40 - 105+61.75 RT	24.35 (24'-4¼")	**26.85 (26'-10¼")
25	SPAN 5	105+30.85 - 105+61.75 RT	30.90 (30'-10¾")	**33.40 (33'-4¾")

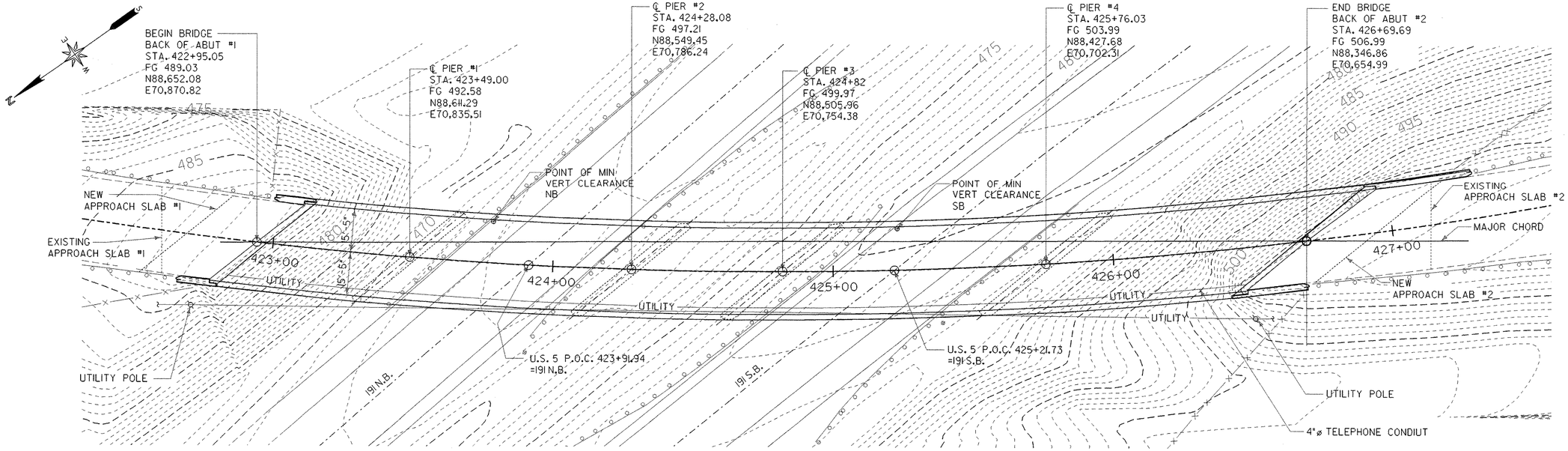
**NOTE: TOTAL BEAM LENGTH INCLUDES ADDITIONAL FOOT (12") TO PROVIDE FOR PANEL SPACING

TEMP. BRIDGE FRAMING PLAN – SHEET 2 OF 2

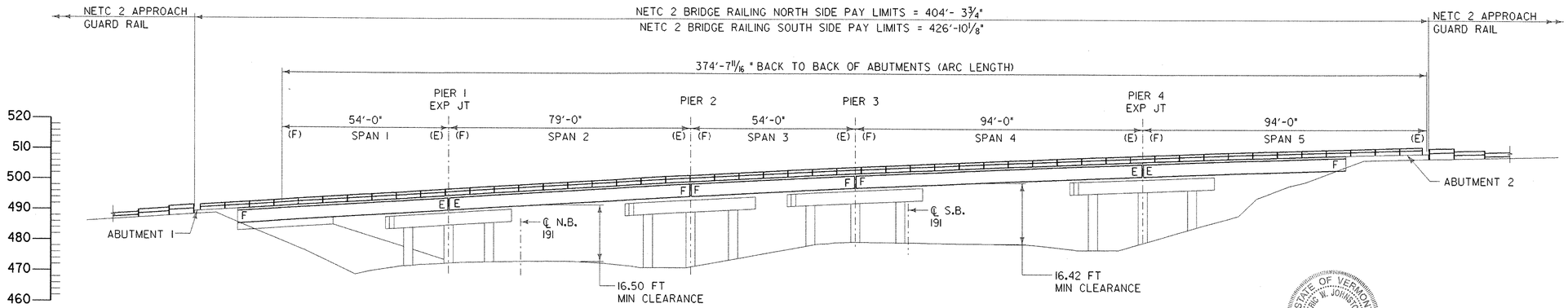
PROJECT NAME: HARTLAND
PROJECT NUMBER: IM 091-1(36)

FILE NAME: /99A272/STR/SA272FRA.DGN
PROJECT LEADER: S. FARNSWORTH
DESIGNED BY: FOWLER/UPMAL
sa272fr2.1

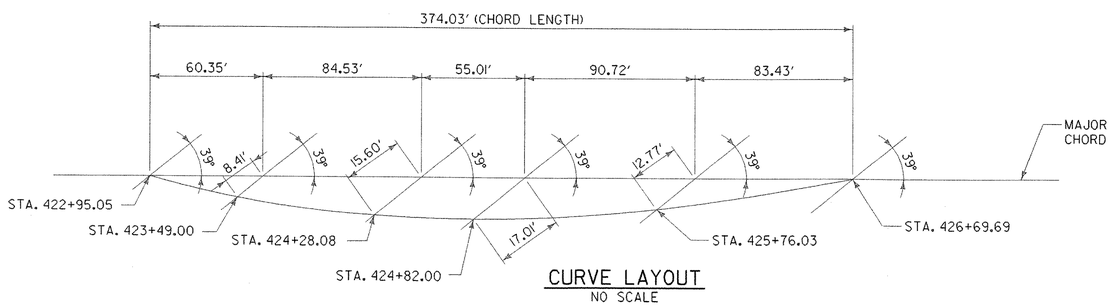
PLOT DATE: 03-FEB-2003
DRAWN BY: K. UPMAL
CHECKED BY: M. FOWLER
SHEET IIC OF 85



PLAN
SCALE: 1"=20'



ELEVATION
SCALE: 1"=20'



CURVE LAYOUT
NO SCALE

NOTES:

1. STATIONING IS NOT IN ACCORDANCE WITH STANDARD VTRANS PROCEDURE BUT HAS BEEN SELECTED TO MAINTAIN CONSISTENCY WITH THE ORIGINAL BRIDGE PLANS.
2. REFER TO THE LAYOUT SHEET (SHEET 6) FOR NEW HORIZONTAL ALIGNMENT DATA.
3. REFER TO THE PROFILE SHEET (SHEET 7) FOR NEW VERTICAL PROFILE DATA.
4. THE VERTICAL DATUM USED IS THE 1998 NAVD DATUM. THE ORIGINAL BRIDGE VERTICAL DATUM WAS THE NGVD 1929 DATUM.
5. STATIONS ARE BASED ON SURVEY DATA. PIER 3 ORIGINAL BRIDGE STATION WAS HELD.
6. EXPANSION/FIXED BEARING LOCATIONS NOTED (E) AND (F) ARE FOR THE EXISTING CONDITION ONLY. "E" AND "F" AT THE BEAM ENDS DENOTE THE FINAL BEARING TYPE.
7. DECK EXPANSION JOINTS OCCUR ONLY AT PIERS 1& 4. THE DECK WILL BE CONTINUOUS OVER PIERS 2 & 3. DECK CLOSURE POURS OVER PIERS 2 & 3 SHALL BE PLACED AFTER THE DECK HAS BEEN PLACED IN SPANS 2, 3, AND 4. FOR CLOSURE DETAILS REFER TO SHEETS 15 - 17

SCALE 1" = 20'-0
20 0 20

STATE OF VERMONT
ERIC W. JOHNSTON
NO. 7862
STRUCTURAL
LICENSED
PROFESSIONAL ENGINEER

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
GENERAL PLAN AND ELEVATION	
Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272gpe.dgn	
Bridge Sheet No.	Sheet 12 of 85

STONE & WEBSTER, INC.

04-FEB-2003
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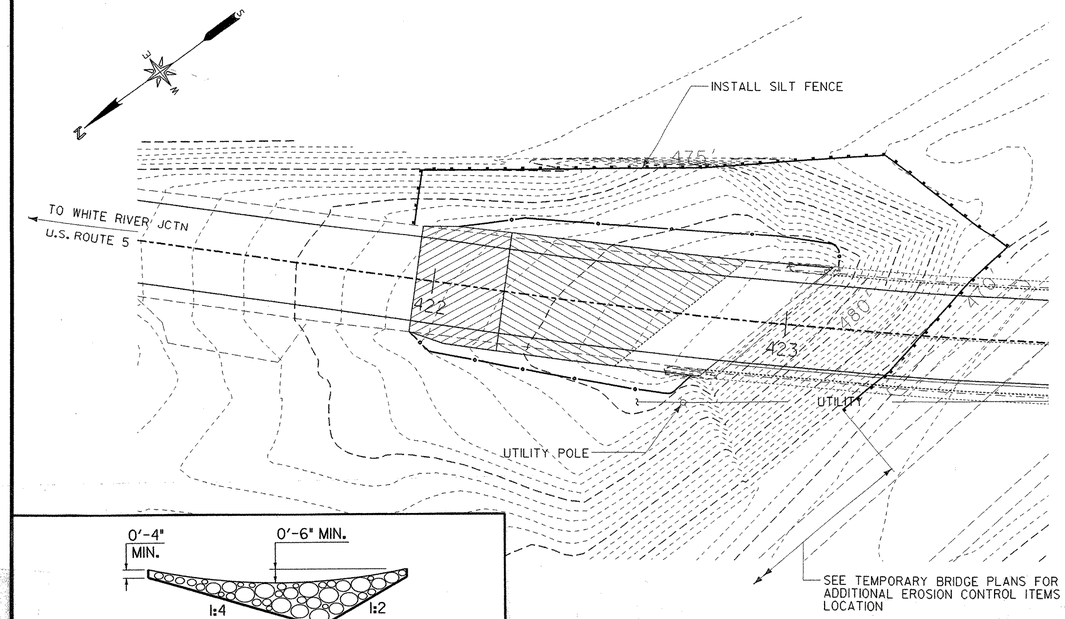
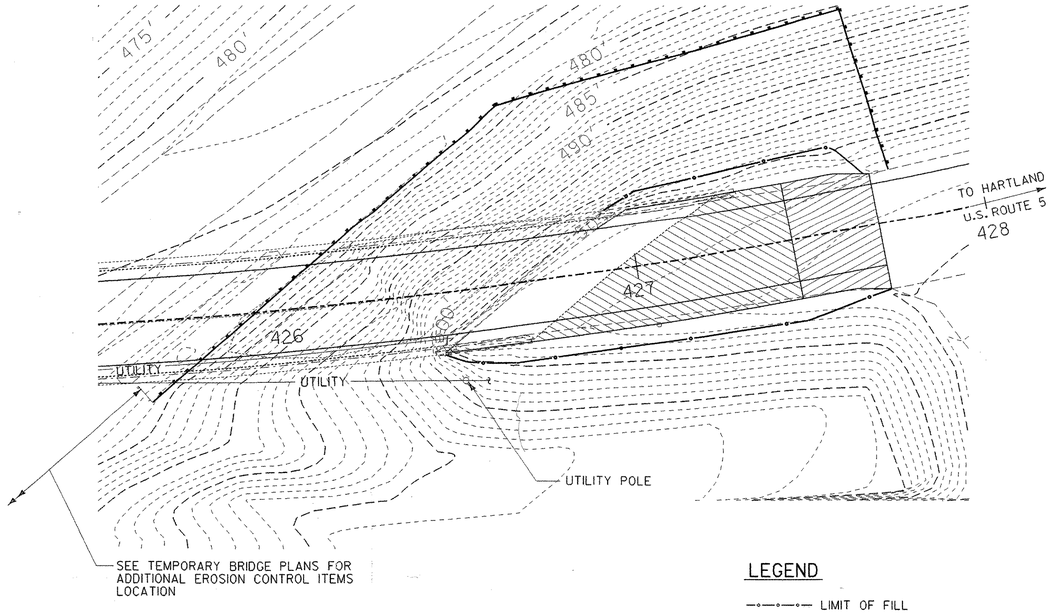




SEDIMENT AND EROSION CONTROL PLAN

SCALE: 1" = 20'-0"

LEGEND

—o—o— LIMIT OF FILL

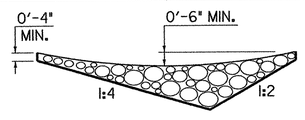
——— GEOTEXTILE FILTER FABRIC (SILT FENCE)

CONSTRUCTION NOTES:

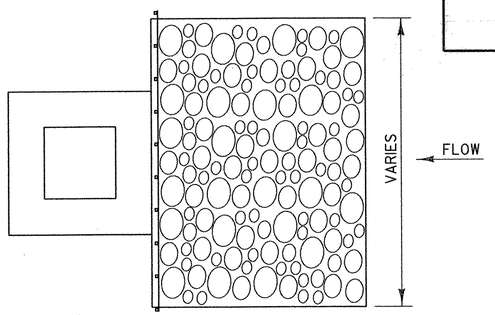
1. REFER TO STANDARD DRAWING T-1 FOR SILT FENCE DETAILS.
2. PRIOR TO EARTHWORK ACTIVITIES, INSTALL GEOTEXTILE FILTER FABRIC AT LOCATIONS SHOWN. THE FABRIC SHALL BE ON THE UPHILL SIDE OF ALL WOOD POSTS. THE FABRIC SHALL BE ANCHORED IN A 6" TRENCH.
3. FILTER FABRIC SHALL NOT BE PLACED ACROSS ANY STREAM OR SWALE.
4. CONTRACTOR SHALL CLEAN ALL SILT/DEBRIS FROM FENCE ON A MONTHLY BASIS.
5. CONTRACTOR SHALL REMOVE FILTER FABRIC AFTER ALL SEEDING/MULCHING IS COMPLETED, OR AT THE DIRECTION OF THE ENGINEER.

SCALE 1" - 20'-0

20 0 20



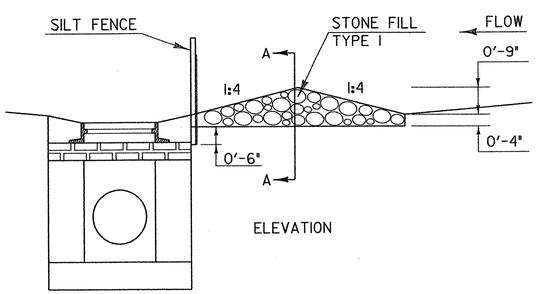
SECTION A - A



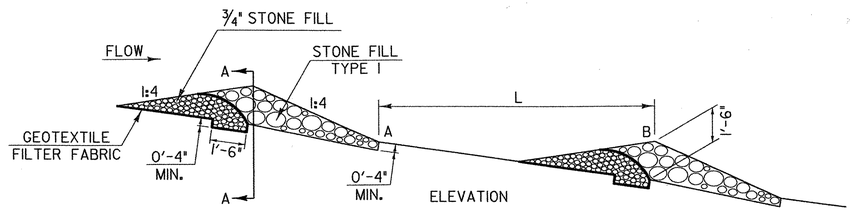
PLAN

DROP INLET ROCK CHECK DAM

NOT TO SCALE



ELEVATION



ELEVATION

DITCHLINE ROCK CHECK DAMS

NOT TO SCALE

NOTES:

* L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.
* SEDIMENT SHOULD BE REMOVED IF DEPTH REACHES HALF THE ORIGINAL HEIGHT OF ROCK CHECK DAM.
* ROCK CHECK DAMS SHOULD BE REMOVED AFTER PERMANENT VEGETATION HAS ESTABLISHED.
* GEOTEXTILE SHOULD BE USED UNDERNEATH STONE TO IMPROVE STABILITY AND ASSIST IN REMOVAL.
* LARGER STONE MAY BE REQUIRED FOR ROCK CHECK DAMS THAT ARE LOCATED ON STEEPER SLOPES. THIS STONE SHOULD BE PLACED ON THE DOWN STREAM HALF OF THE ROCK CHECK DAM FOR SUPPORT.
* ALL WORK NEEDED FOR CONSTRUCTION AND REMOVAL OF THE ROCK CHECK DAMS WILL BE PAID FOR UNDER THE FOLLOWING ITEMS.
* THE SILT FENCE SHALL BE PAID FOR UNDER ITEM 649.51 "GEOTEXTILE FOR SILT FENCE".
* THE 3/4" STONE AND STONE FILL, TYPE I, WILL BE PAID FOR UNDER ITEM 613.10 "STONE FILL, TYPE I (MOD) (ROCK CHECK DAMS)".
* THE GEOTEXTILE FILTER FABRIC UNDER THE STONE FILL SHALL BE PAID FOR UNDER ITEM 649.31 "GEOTEXTILE UNDER STONE FILL".
* SEED AND HAY MULCH SHALL BE PAID FOR UNDER THEIR INDIVIDUAL ITEMS 651.15 AND 651.25.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

SEDIMENT AND EROSION CONTROL PLAN

Designed By J. BARRACK	Drawn By N. HERRERA
Checked By J. BARRACK Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272ecs.dgn	
Bridge Sheet No.	Sheet 13 of 85

STONE & WEBSTER, INC.

04-FEB-2003

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GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE LATEST AASHTO SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

2. A FIELD SURVEY WAS CONDUCTED BY VAOT, IN WHICH THE FACES OF THE ABUTMENTS AND PIER SURFACES WERE LOCATED. LOCATION OF THE GIRDERS, CURB AND FASCIA OF THE SUPERSTRUCTURE WERE ALSO ESTABLISHED ALONG WITH GROUND FEATURES WITHIN THE PROJECT AREA. THIS INFORMATION WAS THEN USED IN COMBINATION WITH THE ORIGINAL BRIDGE DESIGN PLANS TO DEVELOP THE EXISTING STRUCTURE INFORMATION DEPICTED IN THESE PLANS. THE ORIGINAL BRIDGE DESIGN PLANS ARE INCLUDED IN THIS SET. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING ANY AND ALL DIMENSIONS APPLICABLE TO THIS PROJECT.

3. ALL DIMENSIONS SHOWN ARE EITHER HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES F.

4. ALL EXPOSED EDGES OF ANY NEW CONCRETE SHALL BE CHAMFERED 1" × 1" UNLESS OTHERWISE NOTED. WHENEVER NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE, THE EXISTING SURFACE SHALL BE CLEANED AS CALLED FOR IN SECTION 501.13.

5. JOINTS AND SCORE MARKS SHALL BE MONOLITHIC AND CONTINUES FOR THE FULL LENGTH OF THE JOINT. ANY UPWARD KEY SHALL BE INTEGRAL WITH THE CONCRETE BELOW JOINT.

6. REINFORCEMENT PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

   SPACING: +/- 1"
   CLEARANCE: +/- 1/4"

7. ALL NEW REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615) GRADE 60 AND SHALL BE EPOXY COATED UNLESS OTHERWISE STATED AND PAID FOR UNDER ITEM 507.17. IF AND WHEN ANY EPOXY COATED REINFORCING STEEL HAS TO BE CUT IN THE FIELD, THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REBAR WILL NOT BE PERMITTED.

8. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE, BOTH NEW AND EXISTING (INCLUDING ABUTMENTS, WINGWALLS AND PIERS), EXCEPT THE BOTTOM OF THE DECK BETWEEN THE DRIP BEADS.

9. DECK CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS A" APPROACH SLABS, ABUTMENT AND PIER CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS B," UNLESS OTHERWISE NOTED.

10. ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE" SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING CONCRETE DECK, ABUTMENT CURTAIN WALLS, GRANITE CURBS, BEARING DEVICES AND GIRDER SHEAR CONNECTORS.

11. THE ITEM 529.25, "REMOVAL OF CONCRETE OR MASONRY," SHALL INCLUDE THE PARTIAL REMOVAL OF THE EXISTING WINGWALLS AS DETAILED IN THE PLANS AND THE EXISTING PIER CAPS TO THE ELEVATIONS INDICATED IN THE PLANS.

12. PAYMENT FOR REMOVAL OF THE EXISTING BITUMINOUS CONCRETE PAVEMENT ON THE BRIDGE SHALL BE MADE UNDER THE ITEM 529.10, "REMOVAL OF BRIDGE PAVEMENT." THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY AT AN OFFSITE LOCATION.

13. NOT USED

14. NOT USED

15. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION PROJECT SIGNING AND BARRICADES, AND WILL BE PAID FOR UNDER THE ITEM 641.10 "MINTENANCE OF TRAFFIC CONTROL".

16. NOT USED

17. NOT USED

18. PAVE THE BRIDGE AND APPROACH SLABS WITH 1 1/4" BITUMINOUS CONCRETE, TYPE IV BINDER COURSE, AND 1/2" BITUMINOUS CONCRETE TYPE III.

19. NOT USED

20. FOLLOWING REMOVAL OF THE DECK AND BEFORE DECK FORMS ARE SET, OR SHEAR STUDS INSTALLED, THE ENGINEER SHALL PROFILE ALONG THE TOP OF THE EXISTING BEAMS TO OBTAIN ELEVATIONS FOR USE IN DETERMINING THE FINISH GRADE AND FOR DETERMINING SHEAR STUD LENGTHS.

21. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE ARE NO BOLT HOLES IN THE EXISTING FASCIA BEAMS THAT COULD BE USED TO SUPPORT FALSE WORK.

22. ALL EXISTING STRUCTURAL STEEL SHALL BE 100% CLEANED AND PAINTED PER SUPPLEMENTAL SPECIFICATION SECTION 513, AND GREASED PER SECTION 513.06(C). PAINT COLOR SHALL BE GREEN AND SHALL CONFORM WITH FEDERAL STANDARD NO. 595, COLOR CHIP NO. 14062. THE PAINTING AND SURFACE PERPARATION OF THE EXISTING STEEL SHALL BE PAID FOR AS ITEMS 513.30 "STRUCTURAL PAINTING, FIELD APPLIED", 513.36 "CONTAINMENT AND ENVIROMENTAL PROTECTION, FIELD", AND 513.41 "SURFACE PREPARATION, FIELD".

23. PAINTING OF THE SUPERSTRUCTURE STRUCTURAL STEEL SHALL BE PERFORMED AFTER THE COMPLETION OF THE COMPLETE DECK REPLACEMENT AND IN THE SECOND CONSTRUCTION SEASON.

24. SURFACE OF BRIDGE SEATS AT PIERS UNDER BEARING DEVICES SHALL BE LEVEL. OTHER PORTIONS OF THE PIER SEAT AREAS SHALL BE SLOPED 1/2" PER FOOT AWAY FROM THE CENTER LINE OF THE PIERS. THE ENTIRE PIER BRIDGE SEAT SURFACES SHALL BE SMOOTH WITH EITHER A WOOD OR MAGNESIUM FLOAT FINISH.

25. THE CONTRACTOR SHALL PROTECT TRAFFIC UNDER THE BRIDGE IN SPANS 2 AND 4 BY USING ONE LANE CLOUSURES PER E-103 AND ERECTING PROTECTION BETWEEN STEEL STRINGERS. THE COST OF THIS WORK SHALL BE PAID FOR AS ITEM 527.11 "TRAFFIC PROTECTION FOR BRIDGE PROJECTS".

26. WHERE SHEAR CONNECTORS EXIST IN COMPRESSION ZONES OF EXISTING GIRDERS, CONTRACTOR SHALL CUT THE SHEAR CONNECTOR OFF AT THE TOP OF THE WELD WITHOUT DAMAGING THE TOP FLANGE.

27. THE EXISTING BRIDGE RAILING AND ALL OF THE COMPONENTS INCLUDING THE SNOW FENCE SHALL REMAIN THE PROPERTY OF THE STATE. WHEN REMOVED BY THE CONTRACTOR, THESE ITEMS SHALL BE STOCKED PILED AND DELIVERED TO THE WINDSOR GARAGE LOCATED OFF US 5 APPROXIMATELY TWO MILES SOUTH OF EXIT 9 INTERCHANGE WITH I-91. THE CONTRACTOR SHALL COORDINATE THE DELIVERY WITH THE RESIDENT AND DISTRICT ENGINEER. COST SHALL BE INCLUDED UNDER ITEM 525.10 REMOVAL OF EXISTING RAILING.

28. EPOXY BONDING COMPOND USED BETWEEN EXISTING CONCRETE AND NEW CONCRETE SHALL BE INCLUDED IN THE UNIT COST OF THE NEW CONCRETE ITEM.

CONSTRUCTION SCOPE:

THE SCOPE OF CONSTRUCTION INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

- PROJECT SIGNING AND MOBILIZATION
- TRAFFIC CONTROL FOR INTERSTATE 91 AND US 5
- INSPECTION, LOADING, TRANSPORTATION AND CONSTRUCTION OF TWO-WAY TEMPORARY BRIDGE USING VTRANS BEAMS. SEE PROJECT SPECIAL PROVISIONS FOR THE LOCATION OF BEAMS.
- COMPLETE REMOVAL OF EXISTING CONCRETE DECK AND APPERTENANCES
- SUPPORTING THE EXISTING STEEL AND REMOVAL OF EXISTING BEARINGS
- REPAIRING DETERIORATED SUBSTRUCTURE CONCRETE
- REMOVE EXISTING SHEAR CONNECTORS
- INSTALLING SHEAR CONNECTORS ON EXISTING GIRDERS
- REPLACING ALL EXISTING BEARINGS
- CONSTRUCTING NEW CONCRETE DECK
- CONSTRUCTING NEW EXPANSION JOINTS
- CONSTRUCTING NEW BRIDGE RAILING
- CONSTRUCTING NEW APPROACH SLABS
- INSTALLING SHEET MEMBRANE TORCH APPLIED WATERPROOFING SYSTEM ON NEW CONCRETE DECK
- PAVING BRIDGE DECK AND APPROACHES
- APPLYING WATER REPELLANT TO EXPOSED CONCRETE SURFACES
- INSTALLING GUARDRAIL APPROACHES
- TIEING INTO EXISTING GUARDRAIL
- REMOVAL, TRANSPORTING AND STOCKPILING THE TEMPORARY BRIDGE
- IN SECOND CONSTRUCTION SEASON COMPLETE CLEANING AND PAINTING OF SUPERSTRUCTURE STEEL
- CLEAN UP OF CONSTRUCTION SITE AND COMPLETION OF PROJECT

04-FEB-2003

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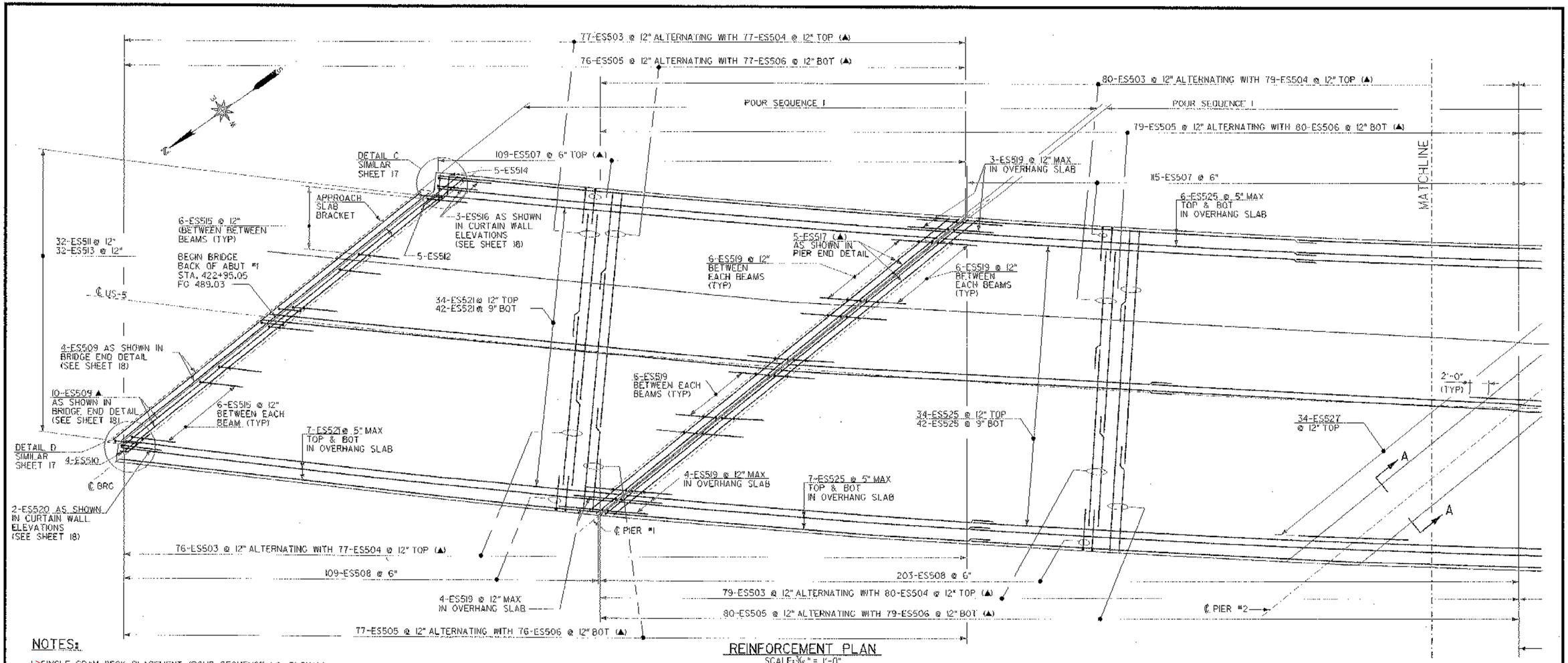
STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
GENERAL NOTES & CONSTRUCTION SCOPE	
Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272gcn.dgn	
Bridge Sheet No.	Sheet 14 of 85



NOTES:

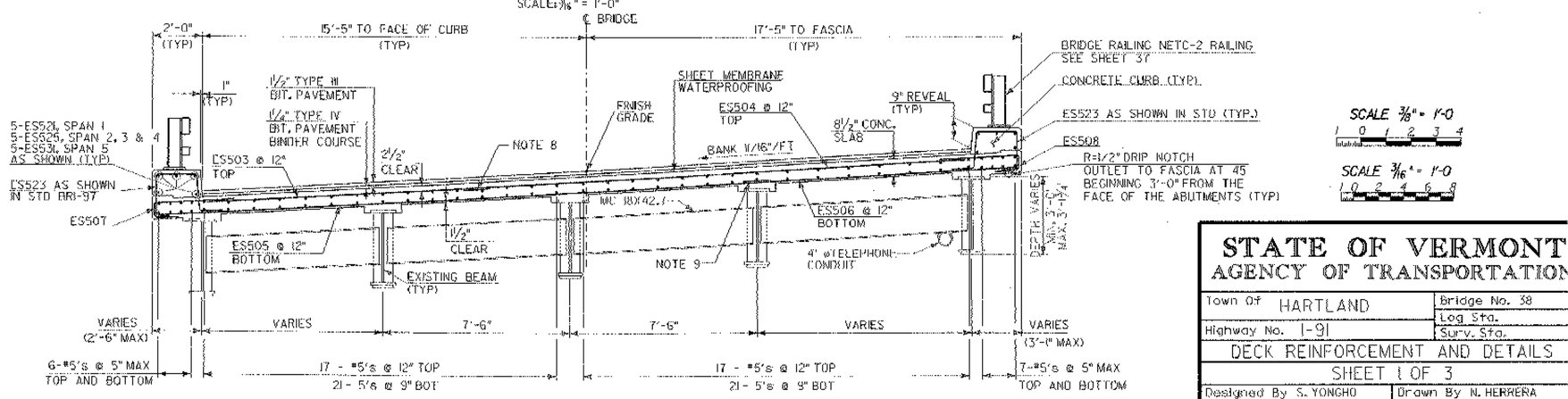
1. SINGLE SPAN DECK PLACEMENT (POUR SEQUENCE 1 & 3) SHALL BE MADE IN A SINGLE POUR STARTING FROM THE LOW END AND PROCEEDING TO THE HIGH END.
2. EACH POUR SEQUENCE 1 MAY BE PLACED IN ANY ORDER OR ALL AT ONE TIME. POUR SEQUENCE 2 SHALL BE PLACED A MINIMUM OF 48 HOURS AFTER POUR SEQUENCE 1 HAS BEEN PLACED. A POUR SEQUENCE 2 MAY BE PLACED AT THE SAME TIME AS A POUR SEQUENCE 1 WHEN THE POUR SEQUENCE 2 IS ON THE HIGH END OF THE TOTAL PLACEMENT AND A MINIMUM OF 48 HOURS HAS PASSED SINCE THE ADJACENT POUR SEQUENCE 1 WAS PLACED.
3. EACH POUR SEQUENCE 3 MAY BE PLACED IN ANY ORDER OR ALL AT ONE TIME. POUR SEQUENCE 4 SHALL BE PLACED A MINIMUM OF 48 HOURS AFTER POUR SEQUENCE 3 HAS BEEN PLACED. A POUR SEQUENCE 4 MAY BE PLACED AT THE SAME TIME AS A POUR SEQUENCE 3 WHEN THE POUR SEQUENCE 4 IS ON THE HIGH END OF THE TOTAL PLACEMENT AND A MINIMUM OF 48 HOURS HAS PASSED SINCE THE ADJACENT POUR SEQUENCE 3 WAS PLACED.
4. APPLY TAR EMULSION AS A BOND BREAKER TO THE TOP SURFACE OF THE GIRDER TOP FLANGE BENEATH THE LINK SLAB.
5. NF = NEAR FACE
   FF = FAR FACE
   EF = EACH FACE
   ▲ = CUT TO FIT IN FIELD
6. REINFORCEMENT SHALL BE PLACED WITH 3" CLEAR UNLESS OTHERWISE NOTED.
7. LAP SPLICE FOR #5 BAR SHALL BE 2'-2" MINIMUM UNLESS OTHERWISE NOTED.
8. ALTERNATE SPLICE LOCATIONS OF ES503 AND ES504 SO THAT THE SPLICE LOCATION OCCURS AT MID SPAN BETWEEN GIRDERS 2 AND 3 AND 3 AND 4 IN AN ALTERNATING PATTERN.
9. ALTERNATE SPLICE LOCATION OF ES505 AND ES506 SO THAT THE SPLICE LOCATION OCCUR AT GIRDER 2 AND 4 IN AN ALTERNATING PATTERN.

REINFORCEMENT PLAN

SCALE: 3/16" = 1'-0"

TYPICAL SECTION

SCALE 3/8" = 1'-0"



SCALE 3/8" = 1'-0
1 0 1 2 3 4

SCALE 3/16" = 1'-0
1 0 2 4 6 8

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.

DECK REINFORCEMENT AND DETAILS

SHEET 1 OF 3

Designed By S. YONGHO	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT No. IM 091-1(36)
Drawing Name za272dr1.dgn	
Bridge Sheet No.	Sheet 15 of 85

STONE & WEBSTER, INC.

31-DEC-2002

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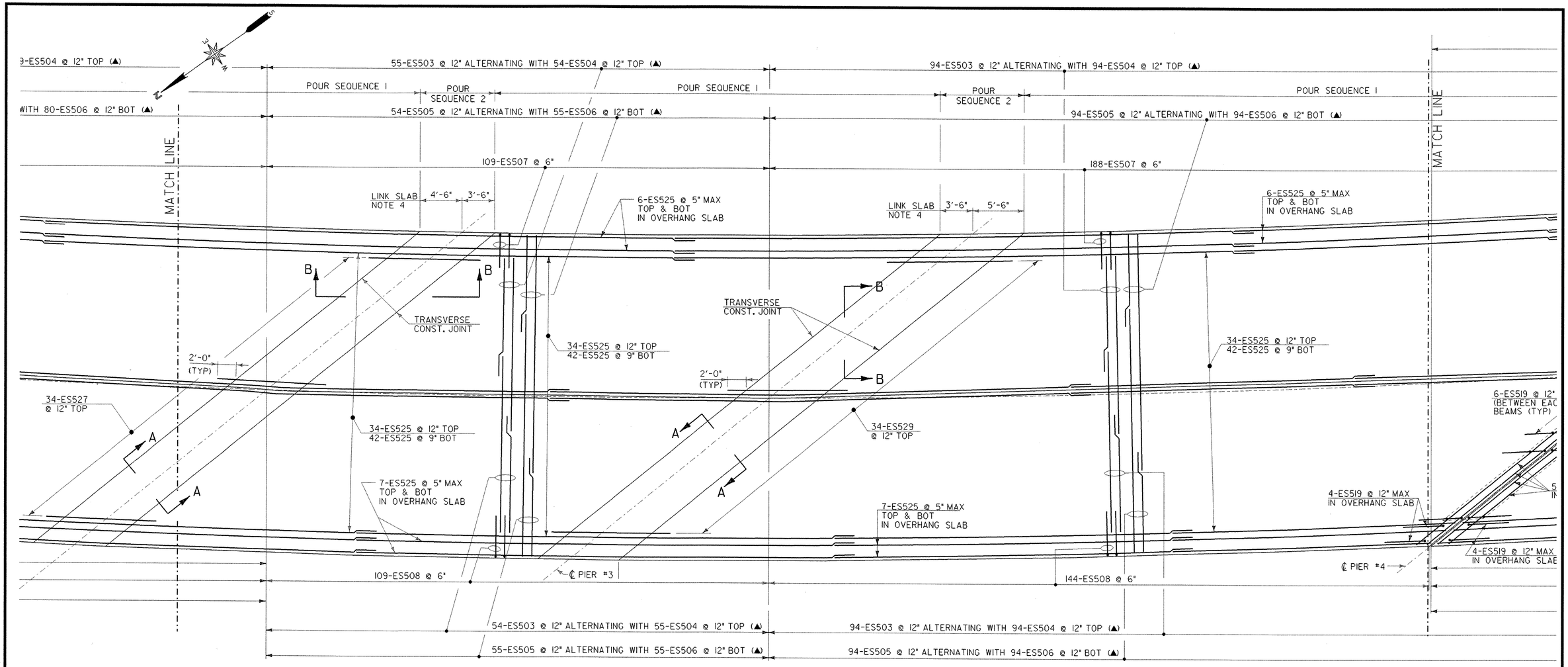


REINFORCEMENT PLAN

SCALE: 3/16" = 1'-0"

SCALE 1" = 1'-0"

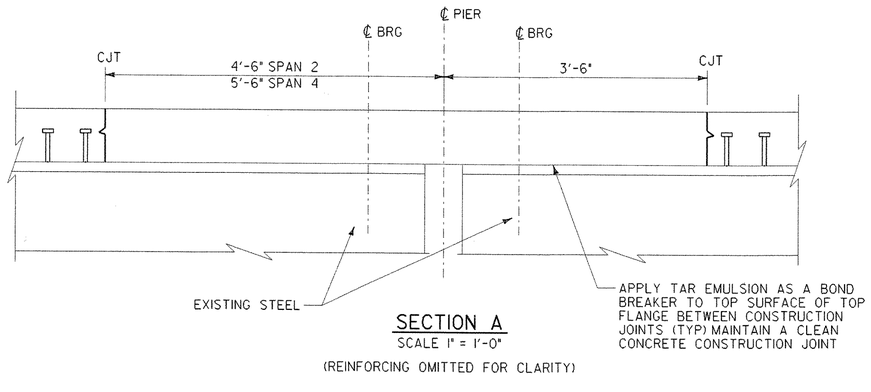
1 9 6 3 0 1 2

SCALE 1 1/2" = 1'-0"

1 9 6 3 0 1

SCALE 3/16" = 1'-0"

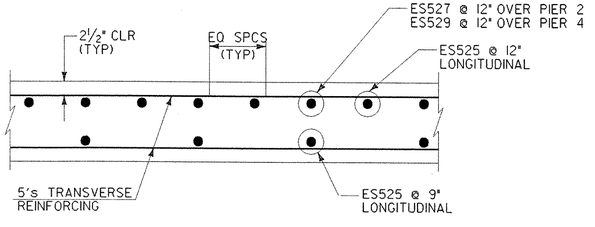
1 0 2 4 6 8



SECTION A

SCALE 1" = 1'-0"

(REINFORCING OMITTED FOR CLARITY)



SECTION B

SCALE 1 1/2" = 1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.

DECK REINFORCEMENT & DETAILS

SHEET 2 OF 3

Designed By S. YONCHO	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272dr2.dgn	
Bridge Sheet No.	Sheet 16 of 85

STONE & WEBSTER, INC.

04-FEB-2003

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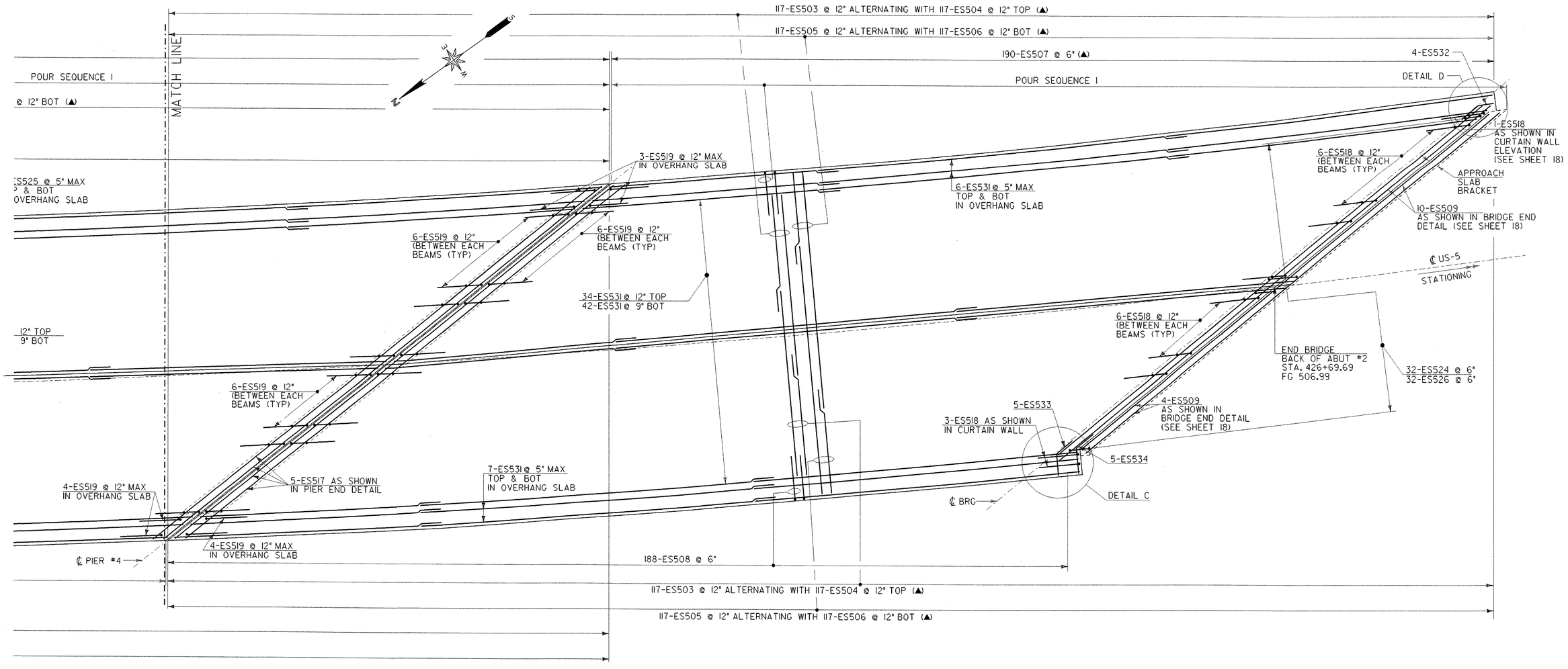
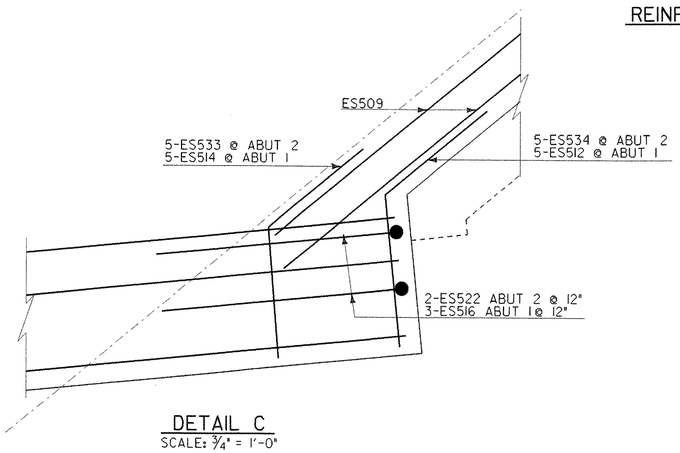


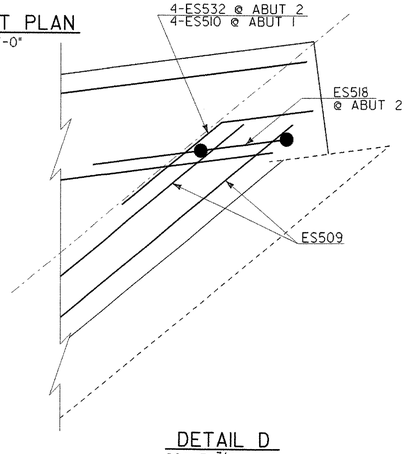
REINFORCEMENT PLAN

SCALE: 3/16" = 1'-0"



DETAIL C

SCALE: 3/4" = 1'-0"



DETAIL D

SCALE: 3/4" = 1'-0"

SCALE 3/4" = 1'-0
0 1 2

SCALE 3/16" = 1'-0
0 2 4 6 8

STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
DECK REINFORCEMENT & DETAILS	
SHEET 3 OF 3	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272dr3.dgn	
Bridge Sheet No.	Sheet 17 of 85

04-FEB-2003

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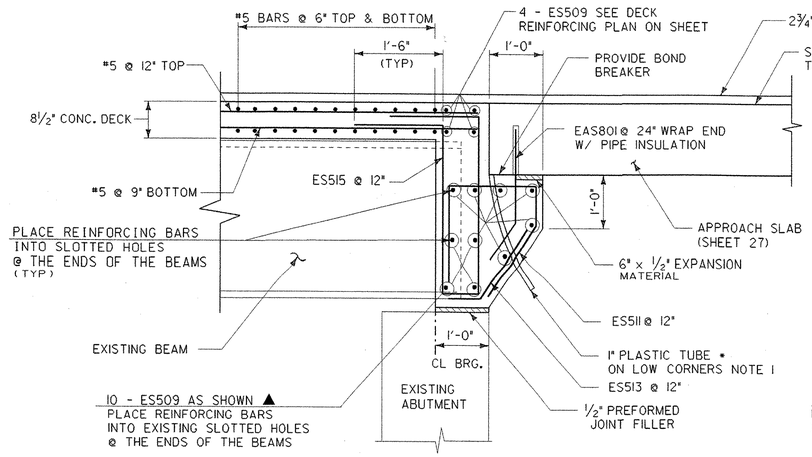
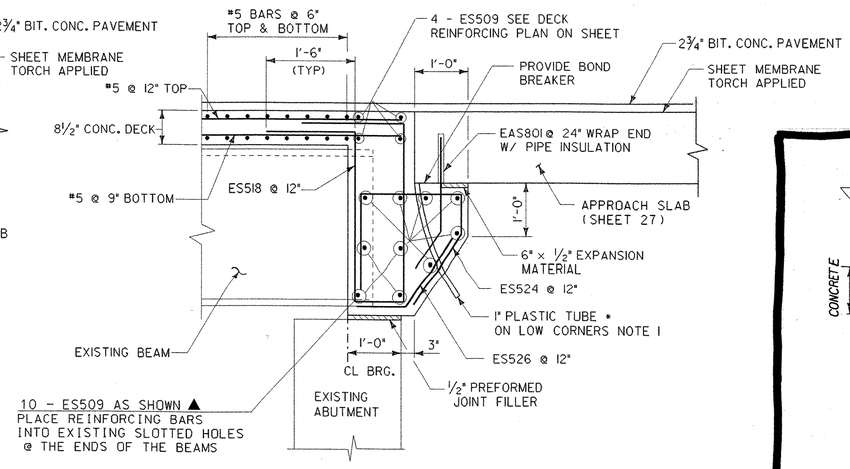
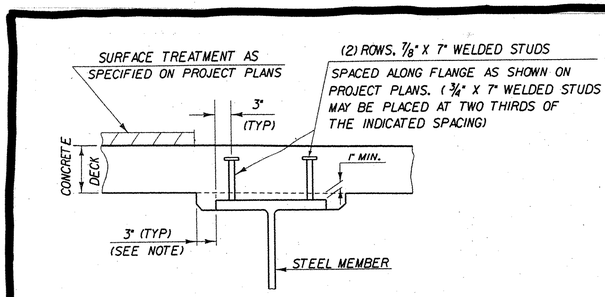


EXISTING ABUTMENT NO. 1
BRIDGE END DETAIL
NORMAL TO ℄ BRG
SCALE: ¾" = 1'-0"



EXISTING ABUTMENT NO. 2
BRIDGE END DETAIL
NORMAL TO ℄ BRG
SCALE: ¾" = 1'-0"

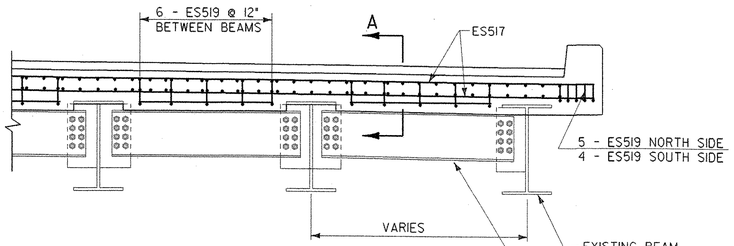


HAUNCH AND SHEAR CONNECTOR DETAILS

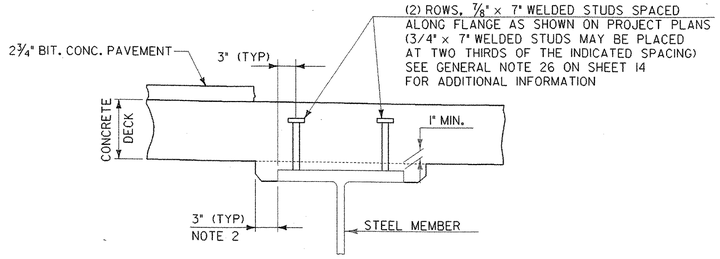
NOTE: THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. SYSTEMS SHALL BE SUBMITTED FOR APPROVAL TO THE STRUCTURES ENGINEER. ALL VOIDS SHALL BE FILLED WITH MORTAR, TYPE IV OR AN EQUIVALENT PRODUCT FROM THE APPROVED PRODUCTS LIST.

OPTIONAL HAUNCH AND SHEAR CONNECTOR DETAILS

VTRANS -- 2/5/03



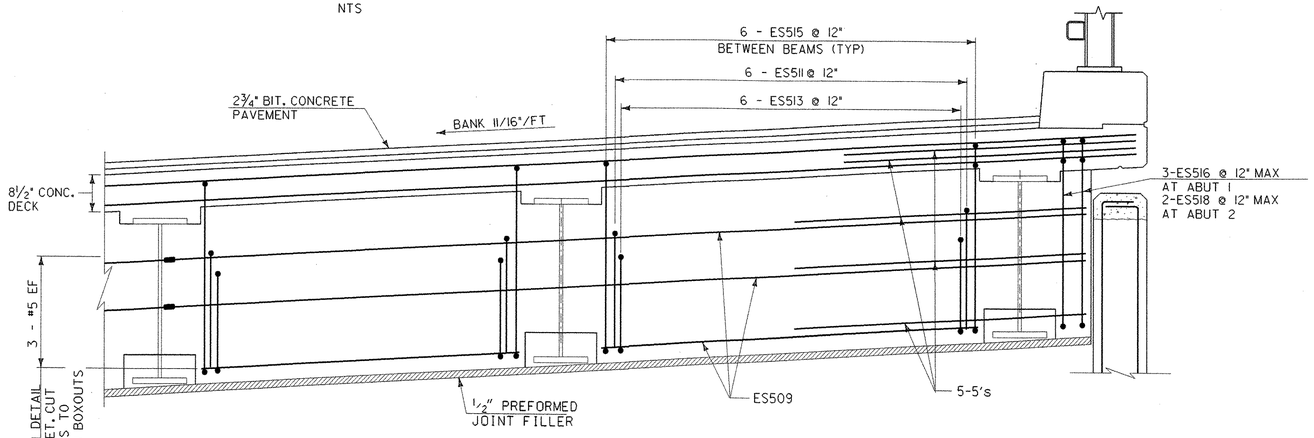
ELEVATION VIEW
REINFORCING @ PIER 1 & 4
NTS



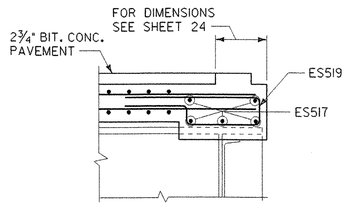
HAUNCH AND SHEAR
CONNECTOR DETAILS
NTS

NOTE:

1. SEE SPEC. 740.01. TO BE PAID AS PART OF THE ITEM "CONCRETE, CLASS A".
2. THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES IF APPOVED BY THE STRUCTURES ENGINEER.



CURTAIN WALL ELEVATION
NTS



SECTION A-A
SCALE: ¾" = 1'-0"

SCALE ¾" = 1'-0"
1 0 1 2

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
BRIDGE END AND MISCELLANEOUS DETAILS (SHEET 1 OF 2)	
Designed By S. YONGHO	Drawn By R. J. FERRANTE
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272bed.dgn	
Bridge Sheet No.	Sheet 18 of 85

STONE & WEBSTER, INC.

10-DEC-2002

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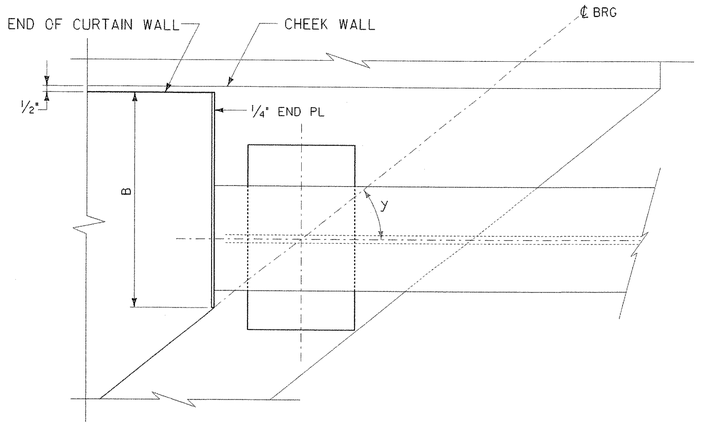
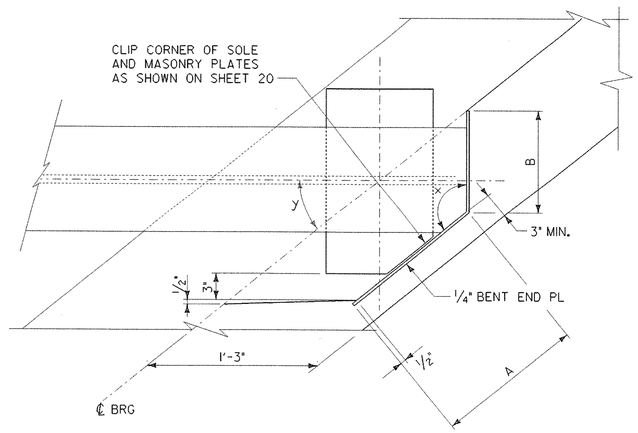
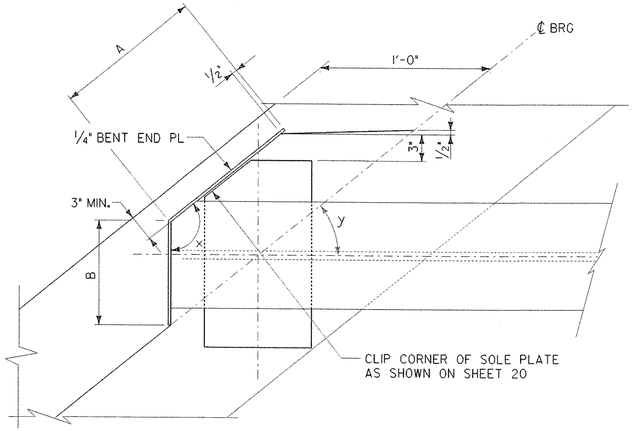


PLAN - BI
SCALE: 1 1/2" = 1'-0

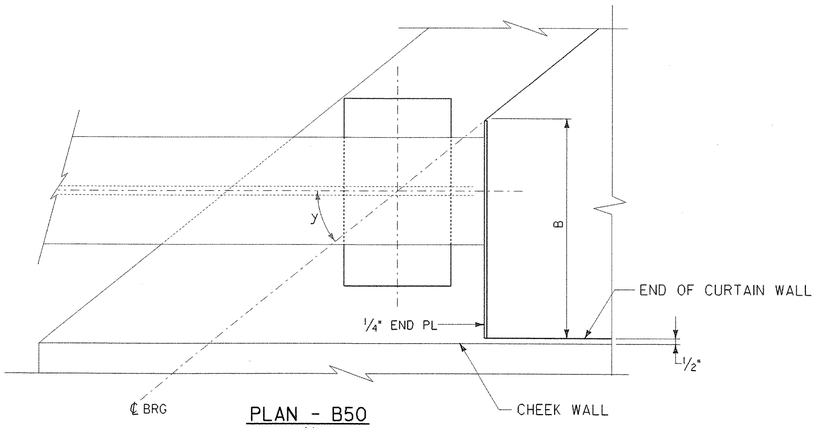


PLAN - B46, B47, B48 & B49
SCALE: 1 1/2" = 1'-0

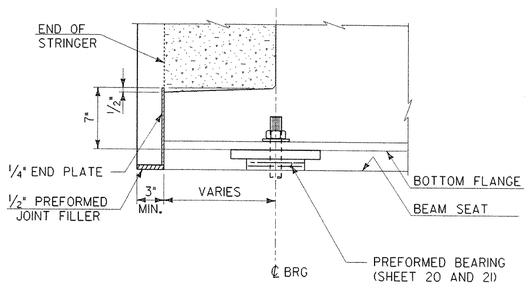
NOTES:
1. SOLE PLATE WILL REQUIRE ONE CORNER TO BE CLIPPED TO CLEAR CURTAIN WALL. FOR DETAILS AND DIMENSIONS OF THE CLIP, SEE SOLE PLATE PLAN - FIXED, BEARING DETAILS SHEET 20.



PLAN - B2, B3, B4 & B5
SCALE: 1 1/2" = 1'-0



PLAN - B50
SCALE: 1 1/2" = 1'-0



STRINGER BOXOUT DETAILS
SCALE: 1 1/2" = 1'-0

END PLATE SCHEDULE				
BEAM	A	B	x	y
BI	-	2'-0 3/8"	-	-
B2, B3 & B4	1'-2 7/8"	1'-0 5/8"	134°-37'-04.45"	44°-37'-04.45"
B5	1'-2 13/16"	1'-0 3/4"	135°-08'-37.22"	45°-08'-37.22"	
B46	1'-2 1/2"	1'-2 3/8"	123°-17'-23.52"	33°-17'-23.52"
B47, B48 & B49	1'-2 1/4"	1'-2 5/8"	124°-05'-00.02"	34°-05'-00.02"
B50	-	1'-10 3/16"	-	-

SCALE 1 1/2" = 1'-0
1 9 6 3 0 1

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta. / Surv. Sta.
BRIDGE END AND MISCELLANEOUS DETAILS (SHEET 2 OF 2)	
Designed By S. YONGHO	Drawn By R. J. FERRANTE
Checked By S. YONGHO Date FEB. 2001	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272be2.dgn	
Bridge Sheet No.	Sheet 18A of 85

STONE & WEBSTER, INC.

10-DEC-2002

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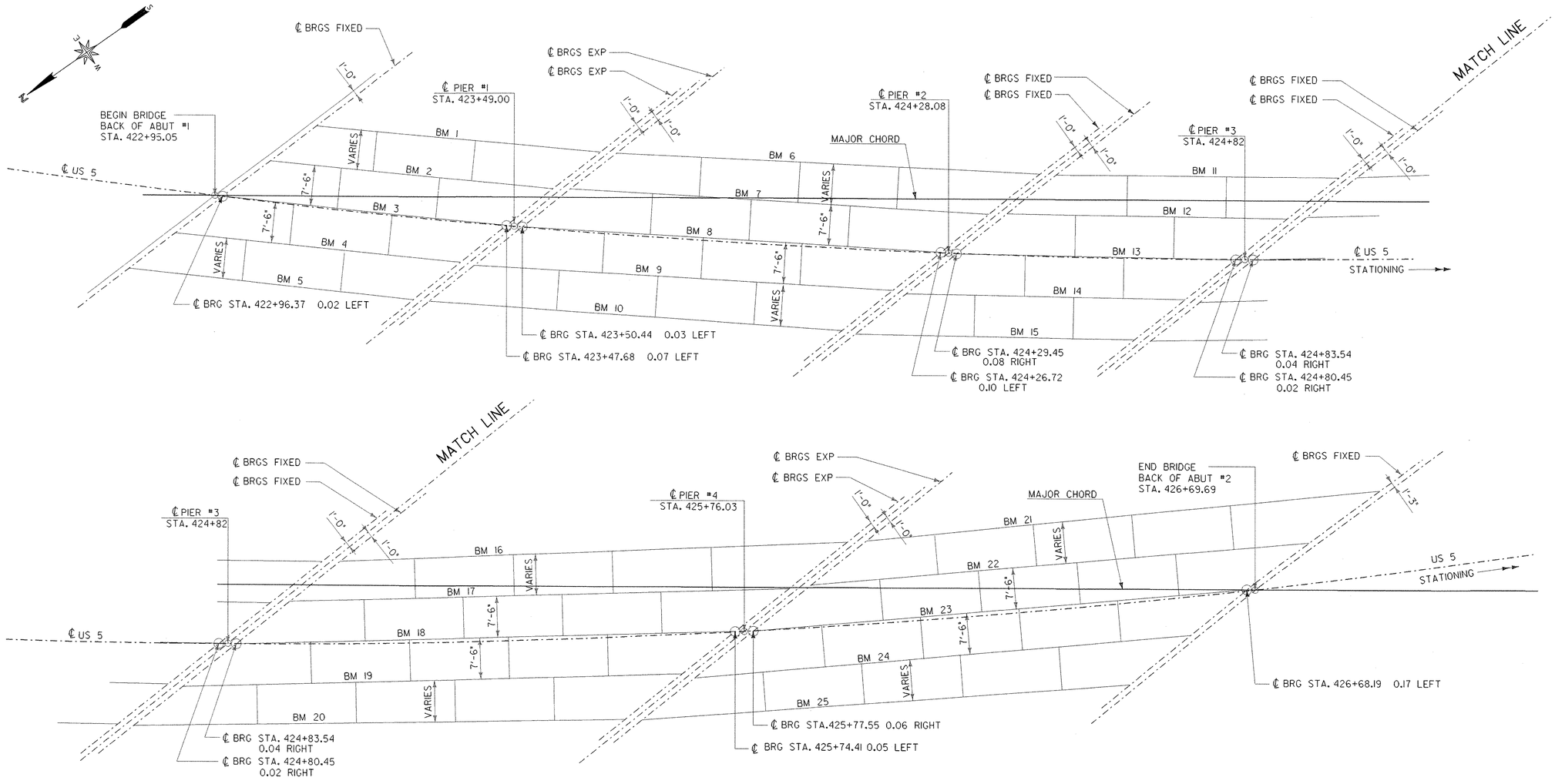
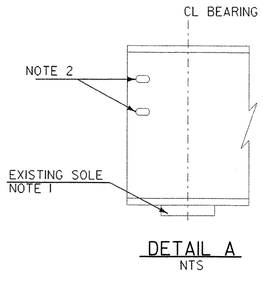


FRAMING PLAN
SCALE: 1" = 10'-0"

SCALE 1" = 10'-0
10 0 10



DETAIL A
NTS

NOTES:

1. EXISTING SOLE PLATES WILL NEED TO BE REMOVED. A REMOVAL PROCEDURE WILL BE REQUIRED TO BE SUBMITTED PRIOR TO ANY OF THIS WORK BEING DONE. THERE WILL BE NO CUTTING INTO THE BASE METAL OF THE FLANGE ALLOWED DURING THE REMOVAL OF EXISTING SOLE PLATES FROM THE BOTTOM FLANGE. THIS WORK WILL BE INCLUDED AS PART OF THE ITEM 531.10 "BEARING DEVICE ASSEMBLY."

2. EXISTING SLOTTED HOLES. IF SLOTTED HOLE IS NOT PRESENT DRILL IN FIELD $1\frac{1}{16} \times 2\frac{1}{2}$ TO ACCEPT REINFORCEMENT SHOWN IN CURTAIN WALL ELEVATION ON SHEET 18

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta. / Surv. Sta.
BRIDGE FRAMING PLAN	
Designed By E. JONHSTON	Drawn By N. HERRERA
Checked By E. JONHSTON Date DEC. 2000	Bridge Design Supervisor E. JONHSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272frp.dgn	
Bridge Sheet No.	Sheet 19 of 85

STONE & WEBSTER, INC.

10-DEC-2002

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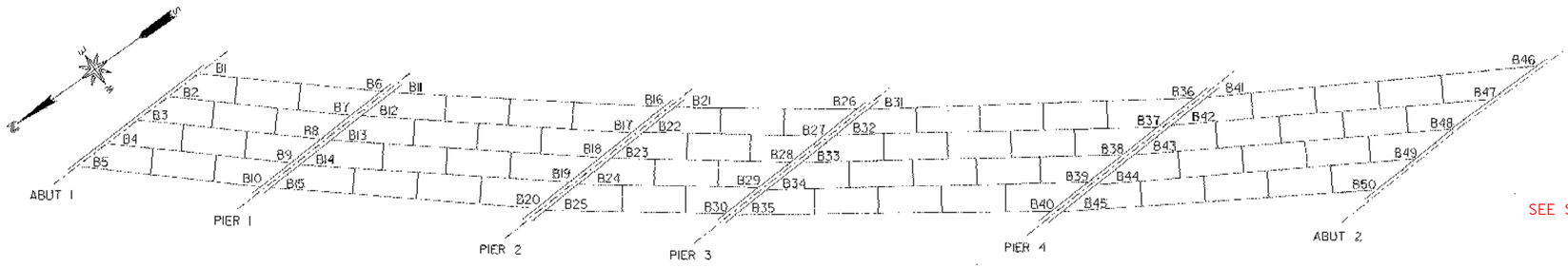
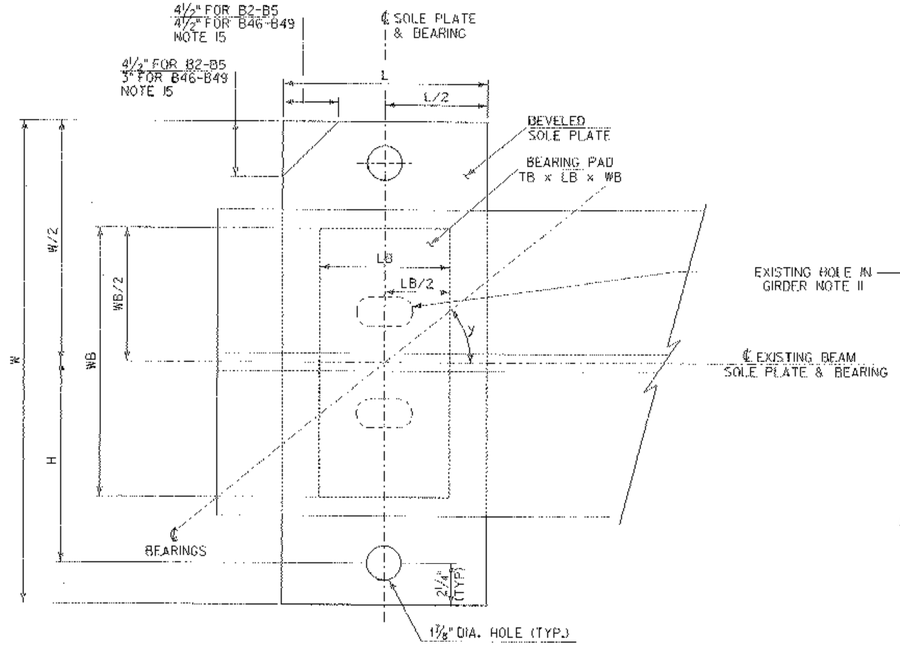


BEARING LOCATION PLAN

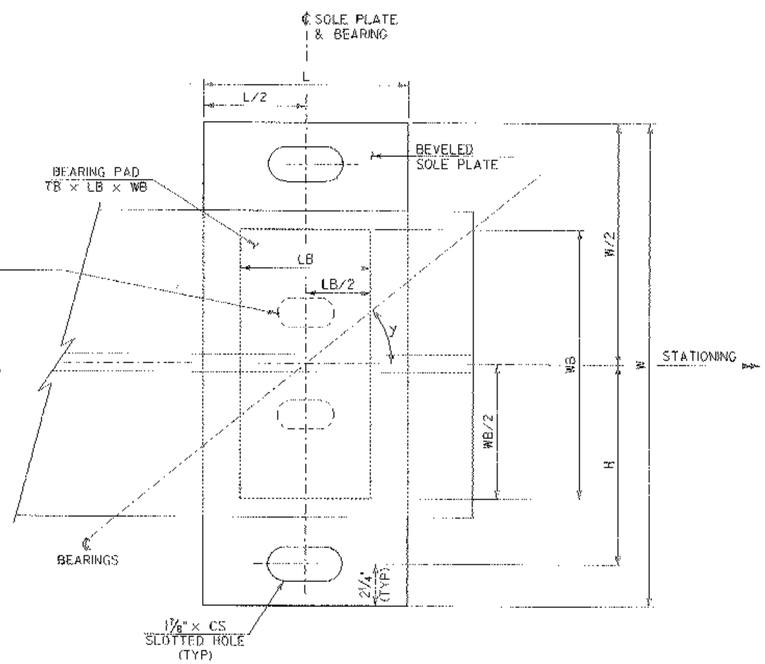
NTS



SOLE PLATE PLAN - FIXED

SCALE 3" = 1'-0"

B16-B20, B26-B30, B46-B50 - OPPOSITE HAND



SOLE PLATE PLAN - EXPANSION

SCALE 3" = 1'-0"

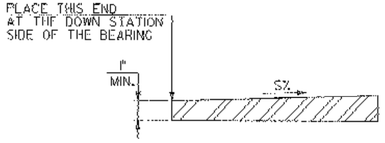
B1-B15, B41-B45 - OPPOSITE HAND

BEARING & SOLE PLATE SCHEDULE (UNITS=INCHES)

PAD	WB	LB	TB	W	L	H	CS	TYPE
B1-B5, B21-B30	12	9	1¾	21¾	12	8⅝	-	FIXED
B6-B10	12	9	1¾	21¾	12½	8⅝	2¾	EXPANSION
B11-B15	13	9	1¾	22¾	13	9⅛	3⅛	EXPANSION
B16-B20	13	9	1¾	22¾	12	9⅛	-	FIXED
B31-B35, B46-B50	17	8	1½	26¾	11	11⅛	-	FIXED
B36-B40	17	8	1½	26⅜	12	11⅛	3⅜	EXPANSION
B41-B45	17	8	1½	26⅜	11¾	11⅛	3¾	EXPANSION

BEAM/BEARING LINE ANGLE

BEARING PAD	y
B1, B6	44°-04'-42.42"
B2-B4, B7-B9	44°-37'-04.45"
B5, B10	45°-08'-37.22"
B11, B16	41°-42'-12.73"
B12-B14, B17-B19	42°-17'-24.45"
B15, B20	42°-51'-41.13"
B21, B26	39°-19'-35.50"
B22-B24, B27-B29	39°-57'-48.28"
B25, B30	40°-34'-50.06"
B31, B36	36°-40'-23.81"
B32-B34, B37-B39	37°-22'-26.99"
B35, B40	38°-03'-01.12"
B41, B46	33°-17'-23.52"
B42-B44, B47-B49	34°-05'-00.02"
B45, B50	34°-50'-48.26"



BEVELED SOLE PLATE DETAIL

NTS

BEARING	SHIM THK "C"	BEARING	SHIM THK "C"	BEARING	SHIM THK "C"
B1	0.36 in	B17	2.28 in	B37	0.48 in
B2	0.36 in	B18	2.40 in	B38	0.72 in
B3	0.36 in	B19	2.16 in	B39	0.36 in
B4 to B5	-	B20	2.52 in	B40 to B45	-
B7	0.48 in	B21	0.24 in	B46	2.04 in
B8	0.48 in	B22	0.36 in	B47	0.60 in
B9	0.48 in	B23	0.36 in	B48	0.72 in
B10	0.60 in	B24	0.48 in	B49	0.36 in
B11 to B15	-	B25	0.48 in	B50	-
B16	2.28 in	B26 to B36	-		

SOLE PLATE SLOPE

PAD	S
B1-B5	6.79%
B6-B10	6.30%
B11-B15	6.35%
B16-B20	5.80%
B21-B25	5.27%
B26-B30	4.76%
B31-B35	4.44%
B36-B40	3.94%
B41-B45	3.36%
B46-B50	2.85%

BEARING NOTES:

1. BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731.
2. BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.10 "BEARING DEVICE ASSEMBLY."
3. SHOP DRAWINGS CONFORMING TO SUBSECTION 531.03 SHALL BE SUBMITTED TO INCLUDE WELDING AND BONDING PROCEDURES.
4. THE CONCRETE SURFACE UNDER THE BEARING DEVICE SHALL BE LEVEL.
5. AT EXPANSION BEARINGS THE "A" DISTANCE IS THE FINAL SETTING FOR THE BEARING PAD AFTER THE CONCRETE SLAB, CURB, PAVEMENT AND BRIDGE RAIL ARE PLACED. "B" DISTANCE IS LISTED FOR SETTING THE BEARING BEFORE THE CONCRETE DECK AND CURBS HAVE BEEN PLACED. THE DIFFERENCE IS THE THEORETICAL ELONGATION OF THE BOTTOM FLANGE DUE TO DEAD LOAD DEFLECTION. THE FINAL "A" DISTANCE, AS SHOWN IN THE TABLE MUST BE ATTAINED WITHIN 1/16 OF AN INCH.
6. ALL STEEL IN BEARING DEVICES (EXCEPT STAINLESS) SHALL BE AASHTO M-270, GRADE 36.
7. ANCHOR BOLTS SHALL HAVE A MINIMUM OF 15" EMBEDMENT INTO THE EXISTING CONCRETE AND SHALL CONFORM TO SUBSECTION 714.08 IN THE "VERMONT SPECIFICATION." THE ANCHOR BOLTS SHALL BE DRILLED AND GROUTED INTO THE ABUTMENT AND PIER BRIDGE SEATS. THE DRILLING AND GROUNTING OF THE ANCHOR BOLTS WILL BE INCLUDED AS PART OF THE ITEM "BEARING DEVICE ASSEMBLY."
8. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED AS PER SUBSECTION 531.04 (B) AND 506.15 OF THE GENERAL SPECIAL PROVISIONS. AREAS OF GALVANIZING OR METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 513 WHICH REFERENCES ASTM A760.
9. CONNECTION PLATES FOR END DIAPHRAGMS AT THE PIERS HAVE BEEN EXCLUDED FROM THE DRAWINGS FOR CLARITY PURPOSES.
10. JACKING AND SHORING FROM THE BEAM SEAT OR FROM THE GROUND WILL BE REQUIRED IN ORDER TO REPLACE THE EXISTING BEARINGS AT THE ABUTMENTS AND CONSTRUCT NEW SEATS AND REPLACE THE BEARINGS AT THE PIERS. DETAILS OF JACKING AND SHORING PROPOSALS SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATIONAL PURPOSES ONLY (TWO WEEKS PRIOR TO COMMENCEMENT OF THIS WORK). IN ADDITION, SUBSTANTIATING DESIGN CALCULATIONS PREFORMED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED FOR INFORMATIONAL PURPOSES ONLY TO THE ENGINEER. THIS WORK SHALL BE PAID FOR UNDER THE ITEM 502.11 "SHORING SUPERSTRUCTURE BEARINGS", WHETHER FROM THE BEAM SEAT OR FROM THE GROUND.
11. EXISTING HOLES IN THE EXISTING BEAM FLANGE ENDS SHALL BE CLEANED AND FILLED WITH JOINT SEALER, POLYURETHANE. THIS WORK WILL BE INCLUDED WITH THE ITEM 531.10, "BEARING DEVICE ASSEMBLY."
12. EXISTING ANCHOR BOLTS SHALL BE CUT OFF FLUSH WITH BRIDGE SEATS AND REMOVE THEIR UPPER PORTION. THE EXISTING BOLTS MAY BE PULLED OUT IF THIS CAN BE DONE WITHOUT DAMAGE TO EXISTING CONCRETE. THIS WORK WILL BE SUBSIDIARY TO THE ITEM 531.10, "BEARING DEVICE ASSEMBLY."
13. ¼" PLATE SHALL BE AASHTO M270 GRADE 36 TO BE PAID FOR AS ITEM 506.60 "STRUCTURAL STEEL."
14. FOR ¼" PLATE AT ABUTMENT CURTAIN WALL SEE STRINGER BOXOUT DETAILS ON SHEET 18A.
15. CLIP SOLE PLATE AS SHOWN TO CLEAR CURTAIN WALL, SEE SHEET 18A.
16. EACH BEARING SHALL BE MARKED WITH BEARING NUMBER AS GIVEN IN THE BEARING LOCATION PLAN AND SHALL ALSO BE MARKED WITH AN 'X' ON THE UPSTATION SIDE OF THE BEARING.

SEE SHEET 20

SCALE 3" = 1'-0

1 9 6 3 0 1

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

BEARING LAYOUT & DETAILS

SHEET 1 OF 2

Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272bll.dgn	
Bridge Sheet No.	Sheet 20 of 85

STONE & WEBSTER, INC.

30-DEC-2002

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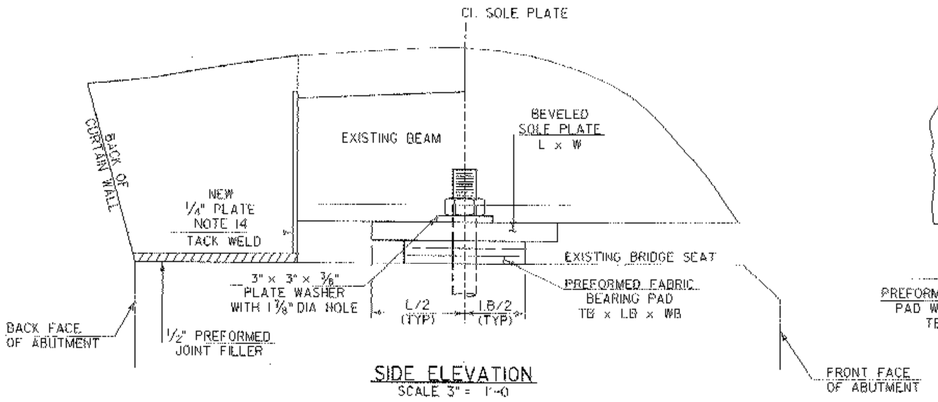
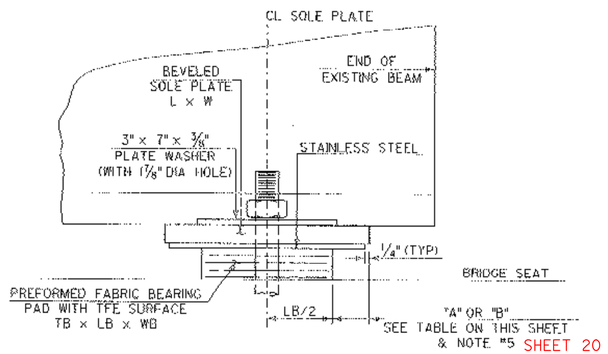
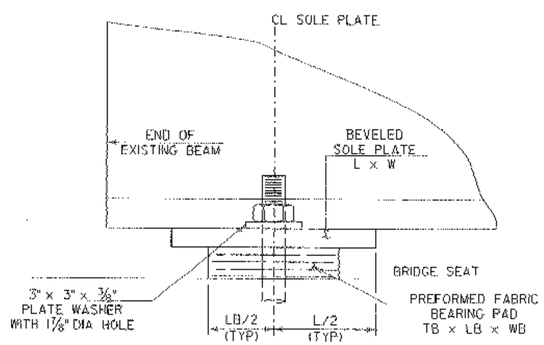


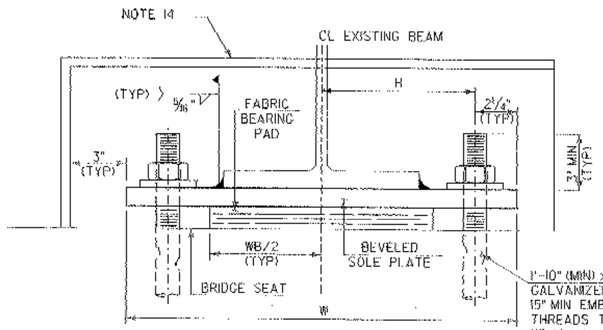
SIDE ELEVATION
SCALE 3" = 1'-0



SIDE ELEVATION
SCALE 3" = 1'-0

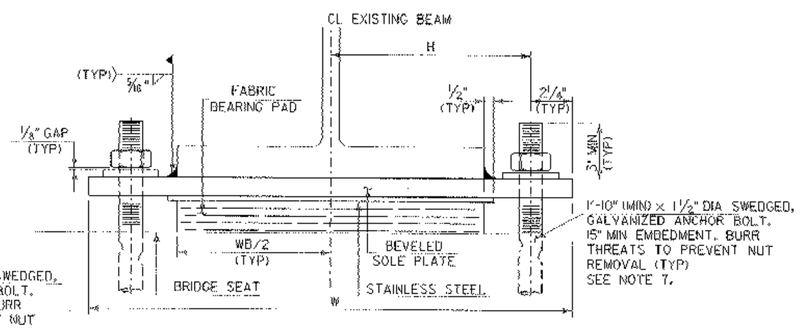


SIDE ELEVATION
SCALE 3" = 1'-0



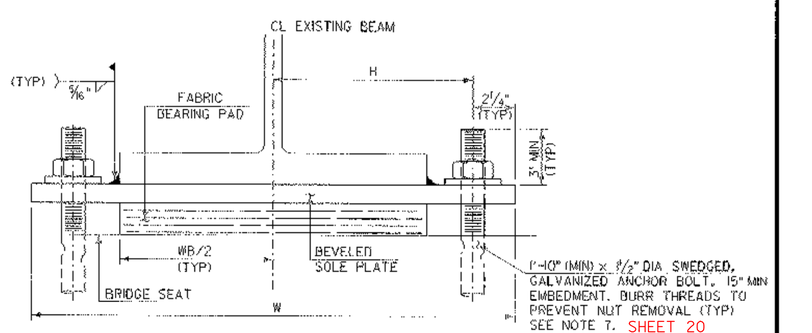
FRONT VIEW
SCALE 3" = 1'-0

FIXED BEARING AT ABUTMENT



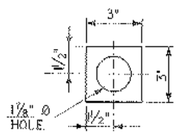
FRONT VIEW
SCALE 3" = 1'-0

EXPANSION BEARING AT PIER 1 & 4

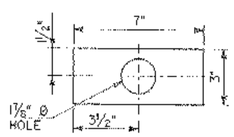


FRONT VIEW
SCALE 3" = 1'-0

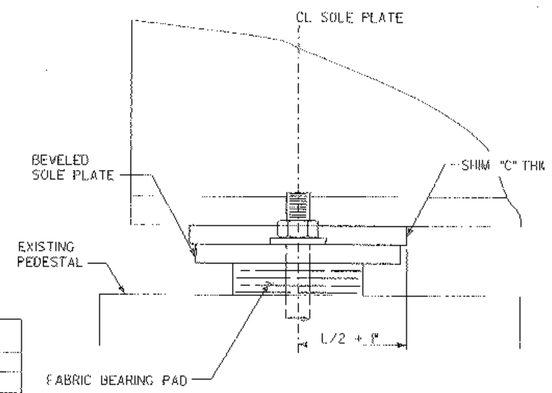
FIXED BEARINGS AT PIERS



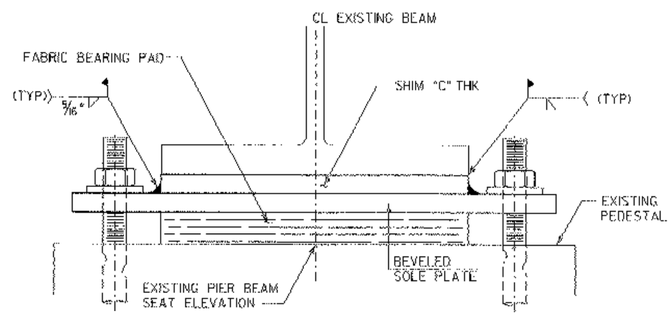
3 x 3 WASHER
SCALE 3" = 1'-0



3 x 7 WASHER
SCALE 3" = 1'-0



SIDE ELEVATION
SCALE 3" = 1'-0



FRONT VIEW
SCALE 3" = 1'-0

NOTES:
1. REFER TO SHEET 20 FOR NOTES.

SCALE 3" = 1'-0
1 9 6 3 0

"A" OR "B" TABLE

TEMP	SPAN 1		SPAN 2		SPAN 4		SPAN 5	
	A	B	A	B	A	B	A	B
0°F	1 1/2"	1 3/8"	1 7/8"	1 5/16"	1 9/16"	1 1/8"	1 7/16"	1"
15°F	1 9/16"	1 3/8"	1 11/16"	1 3/8"	1 5/8"	1 1/4"	1 1/2"	1 1/8"
30°F	1 5/8"	1 7/16"	1 5/8"	1 1/2"	1 3/4"	1 3/8"	1 5/8"	1 1/4"
45°F	1 11/16"	1 1/2"	1 7/8"	1 3/16"	1 7/8"	1 7/16"	1 3/4"	1 3/8"
60°F	1 3/4"	1 5/16"	1 15/16"	1 11/16"	1 15/16"	1 5/16"	1 15/16"	1 7/16"
75°F	1 3/4"	1 5/8"	2"	1 11/16"	2"	1 5/8"	1 7/8"	1 1/2"
90°F	1 7/8"	1 11/16"	2 1/8"	1 7/8"	2 3/16"	1 13/16"	2 1/16"	1 11/16"

BEARING PAD WITH SHIM

(EXPANSION BEARING SIMILAR)

(REFER TO DETAILS ABOVE FOR INFORMATION NOT PROVIDED)

SEE SHEET 20 FOR THICKNESS OF SHIMS.
BEARING SHIMS TO BE PAID FOR UNDER ITEM 506.60 "STRUCTURAL STEEL (BEARING SHIMS)".

STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

BEARING LAYOUT & DETAILS
SHEET 2 OF 2

Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By Date	Bridge Design Supervisor
E. JOHNSTON DEC 2000	E. JOHNSTON Date
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272bl2.dgn	
Bridge Sheet No.	Sheet 21 of 85

20-DEC-2000
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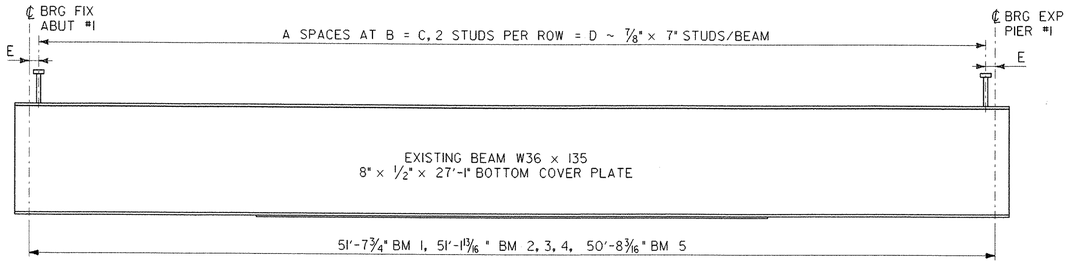
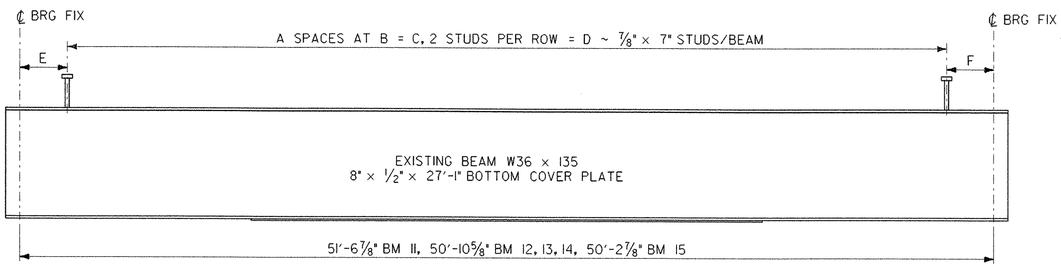
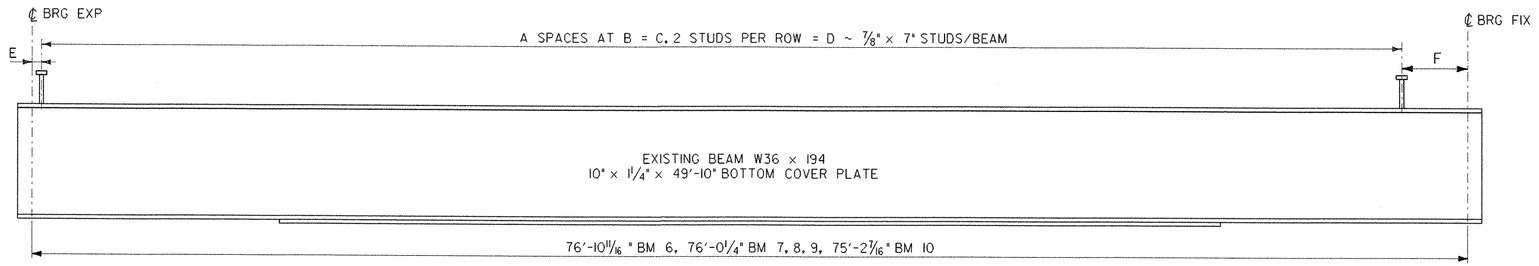


SPAN 1
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT



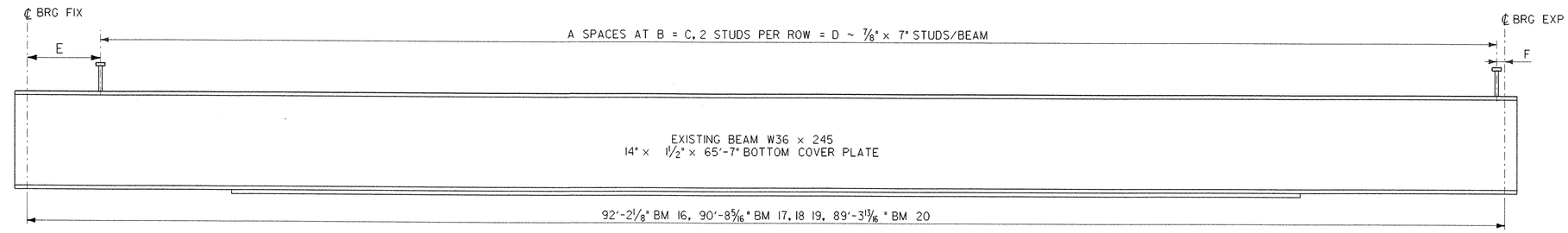
SPAN 3
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT



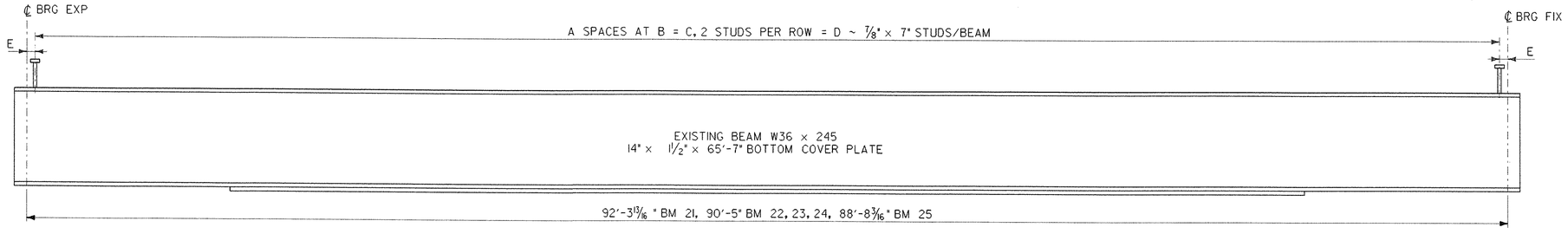
SPAN 2
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT

SHEAR STUD SCHEDULE

BEAM	A	B	C	D	E	F
BM 1	61	10"	50'-10"	124	0'-4 7/8"	-
BM 2, BM 3, BM 4	61	10"	50'-10"	124	0'-1 7/8"	-
BM 5	60	10"	50'-0"	122	0'-4 1/16"	-
BM 6	88	10"	73'-4"	178	0'-0 5/16"	3'-6 5/16"
BM 7, BM 8, BM 9	96	9"	72'-0"	194	0'-3 1/8"	3'-9 1/8"
BM 10	86	10"	71'-8"	174	0'-0 3/16"	3'-6 3/16"
BM 11	62	9"	46'-6"	126	2'-6 3/16"	2'-6 3/16"
BM 12, BM 13, BM 14	61	9"	45'-9"	124	2'-6 1/16"	2'-6 1/16"
BM 15	60	9"	45'-0"	122	2'-7 1/16"	2'-7 1/16"
BM 16	105	10"	87'-6"	212	4'-7 1/16"	0'-1 1/16"
BM 17, BM 18, BM 19	114	9"	85'-6"	230	4'-10 1/8"	0'-4 1/8"
BM 20	101	10"	84'-2"	204	4'-9 7/8"	0'-3 7/8"
BM 21	100	11"	91'-8"	202	0'-3 7/8"	-
BM 22, BM 23, BM 24	108	10"	90'-0"	218	0'-2 1/2"	-
BM 25	96	11"	88'-0"	194	0'-4 1/16"	-



SPAN 4
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT



SPAN 5
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT

NOTES:

1. FOR HAUNCH AND SHEAR CONNECTOR DETAILS SEE SHEET 18.

SCALE 1/4" = 1'-0
1 0 2 4 6 HORIZONTAL

SCALE 1/2" = 1'-0
1 0 1 2 VERTICAL

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.
SHEAR STUD CONNECTION & LAYOUT	
Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272scl.dgn	
Bridge Sheet No.	Sheet 22 of 85

STONE & WEBSTER, INC.

10-DEC-2002
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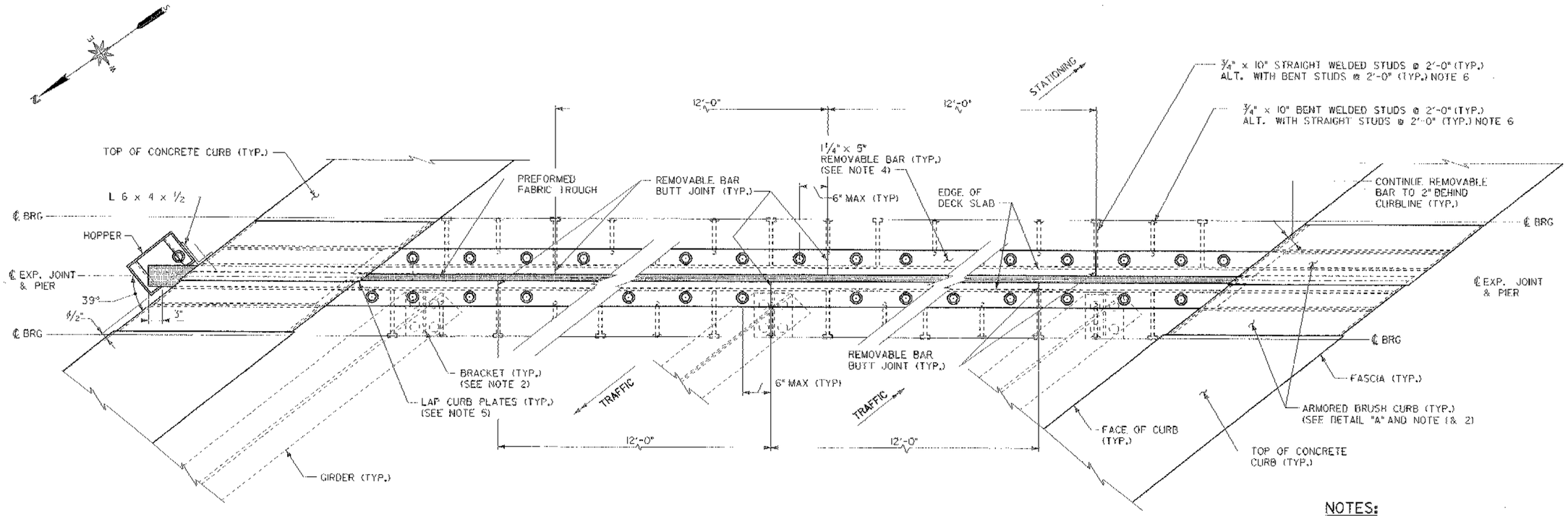
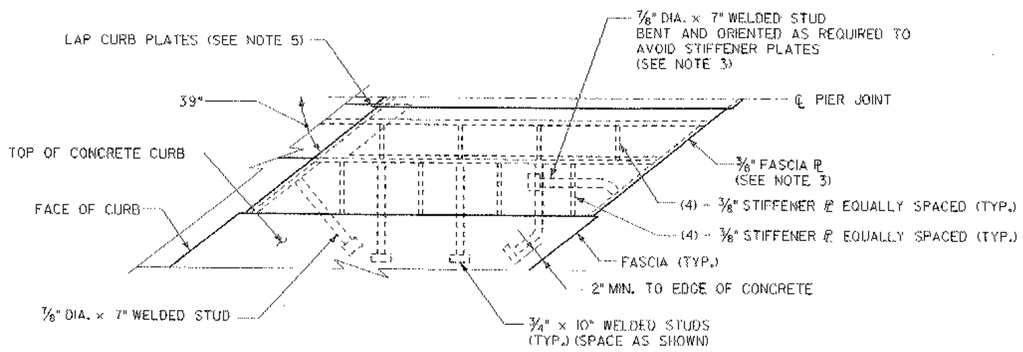


TYPICAL EXPANSION JOINT PLAN

NOT TO SCALE

THE SKEW ON THIS EXPANSION JOINT IS INCORRECT.
IT IS MIRRORED TO WHAT IT SHOULD BE.
PLEASE SEE THE SHOP DRAWINGS FOR THE CORRECT SKEW!



DETAIL "A"

SCALE: 1½" = 1'-0"

(ONE QUADRANT OF ARMORED BRUSH CURB SHOWN - ALL OTHER QUADRANTS SIMILAR)

NOTES:

1. TOP AND FACE OF ARMORED BRUSH CURB ARE ATTACHED BY BOLTS AND ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
2. FOR TYPICAL SECTIONS OF EXPANSION JOINT AND ARMORED BRUSH CURB, SEE TYPE JOINT DETAILS, BRIDGE SHEETS 24 AND 25
3. FOR VIEW OF FASCIA PLATES, AND LOCATION OF WELDED STUDS ON FASCIA PLATES, SEE DETAILS SHEET 26.
4. BARS IN ROADWAY ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
5. LAP CURB PLATES IN DIRECTION OF TRAFFIC. SEE PLAN FOR DIRECTION OF TRAFFIC
6. STUDS NOT SHOWN IN BRUSH CURB FOR CLARITY, REFER TO DETAIL A FOR STUD LAYOUT.

SCALE 1½" = 1'-0

1 9 6 3 0 1

SCALE 1" = 1'-0

1 9 6 3 0 1 2

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

EXPANSION JOINT AT PIERS 1 & 4

SHEET 1 OF 4

Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272jt1.dgn	
Bridge Sheet No.	Sheet 23 of 85

STONE & WEBSTER, INC.

10-DEC-2002

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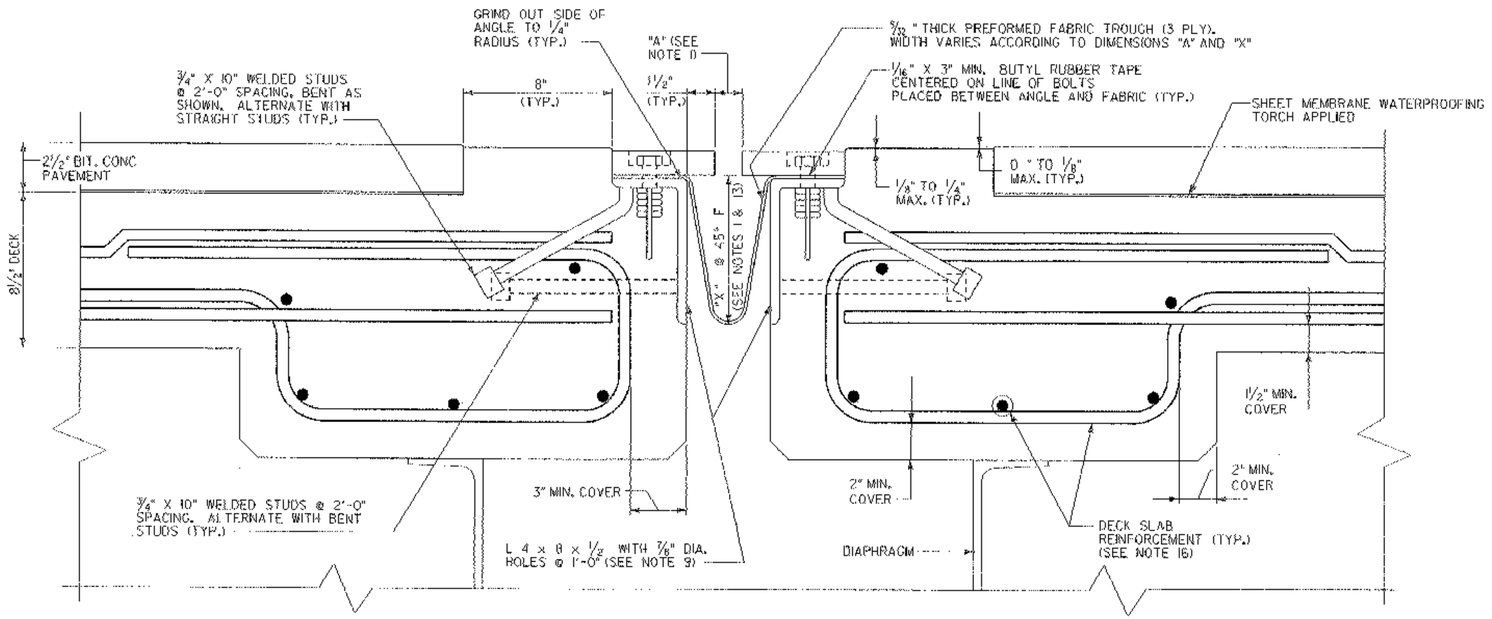
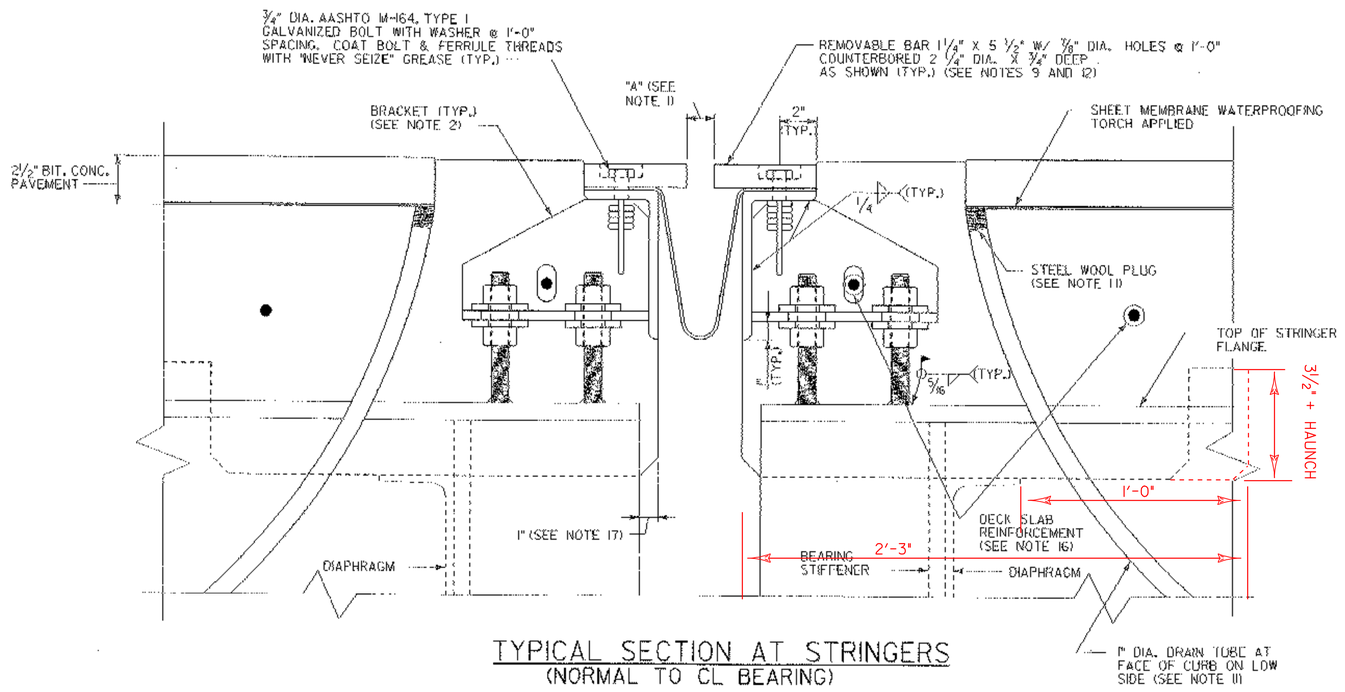


TYPICAL SECTION BETWEEN STRINGERS
(NORMAL TO CL BEARING)

SCALE: 3" = 1'-0"



TYPICAL SECTION AT STRINGERS
(NORMAL TO CL BEARING)

SCALE: 3" = 1'-0"

NOTES:

1. FOR TABLES OF "A" AND "X" DIMENSIONS, SEE EXPANSION JOINT AT JOINT AT PIERS 1& 4 (3 OF 4), SHEET 25
2. FOR BRACKET, PLATE, WASHER AND ANCHOR FERRULE DETAILS, SEE TYPE EXPANSION JOINT AT PIER 1& 4 (3 OF 4), SHEET 25
3. DETAILS ON THIS SHEET ARE FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
4. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS AND SHALL CONFORM TO SUBSECTION 707.07 OF THE SPECIFICATIONS.
5. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M-198, TYPE B.
6. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
7. ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36, UNLESS OTHERWISE SPECIFIED. THREADED ROD AND ASSOCIATED NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS. ALL STEEL COMPONENTS AND HARDWARE SHALL BE GALVANIZED OR METALIZED PER SUBSECTION 506.15 OF THE SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED.
8. PAYMENT FOR ITEM 516.10, "BRIDGE EXPANSION JOINT" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, BRACKETS, ANGLES, WELDED STUDS OR RODS, PREFORMED FABRIC DRAIN TROUGH MATERIAL AND PLASTIC DRAIN TUBES, BUTYL RUBBER TAPE AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL JOINT.
9. THE 4 x 8 x 1/2 ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS FOR EACH PHASE THE 1 1/4" X 5 1/2" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN EQUAL LENGTHS. SEE TYPICAL EXPANSION JOINT PLAN ON SHEET 23 FOR APPROPRIATE LENGTHS.
10. COAT CONCRETE CONTACT SURFACES WITH EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 OF THE SPECIFICATIONS. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
11. A 1" DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND BELOW THE BOTTOM OF THE ADJACENT STRINGER. THE DRAIN TUBES SHALL BE FASTENED TO THE STRINGERS USING A METHOD APPROVED BY THE ENGINEER.
12. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER BOLT INSTALLATION. COSTS FOR THE WORK SHALL BE SUBSIDIARY TO ITEM 516.10.
13. FABRIC TROUGHS SHALL BE INSTALLED SO THAT MINIMUM SLOPE IS 0% FOR POSITIVE DRAINAGE.
14. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
15. EXPANSION JOINTS SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.
16. FOR DECK SLAB REINFORCEMENT, SEE THE TRANSVERSE SECTION AND DECK REINFORCEMENT PLANS.
17. THE DIMENSION FROM END OF EXISTING STRINGER TO END OF NEW DECK SLAB SHALL BE 3 1/2" ±.
18. WORK THIS SHEET WITH TYPICAL DECK SLAB DETAILS AT PIER 1 & 4, SHEET 18.

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Town Of HARTLAND	Bridge No. 38
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Highway No. I-91	Surv. Sta.
EXPANSION JOINT AT PIER 1 & 4	
SHEET 2 OF 4	
Designed By E. JOHNSTON	Drawn By R J FERRANTE
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272jt2.dgn	
Bridge Sheet No.	Sheet 24 of 85

STONE & WEBSTER, INC.

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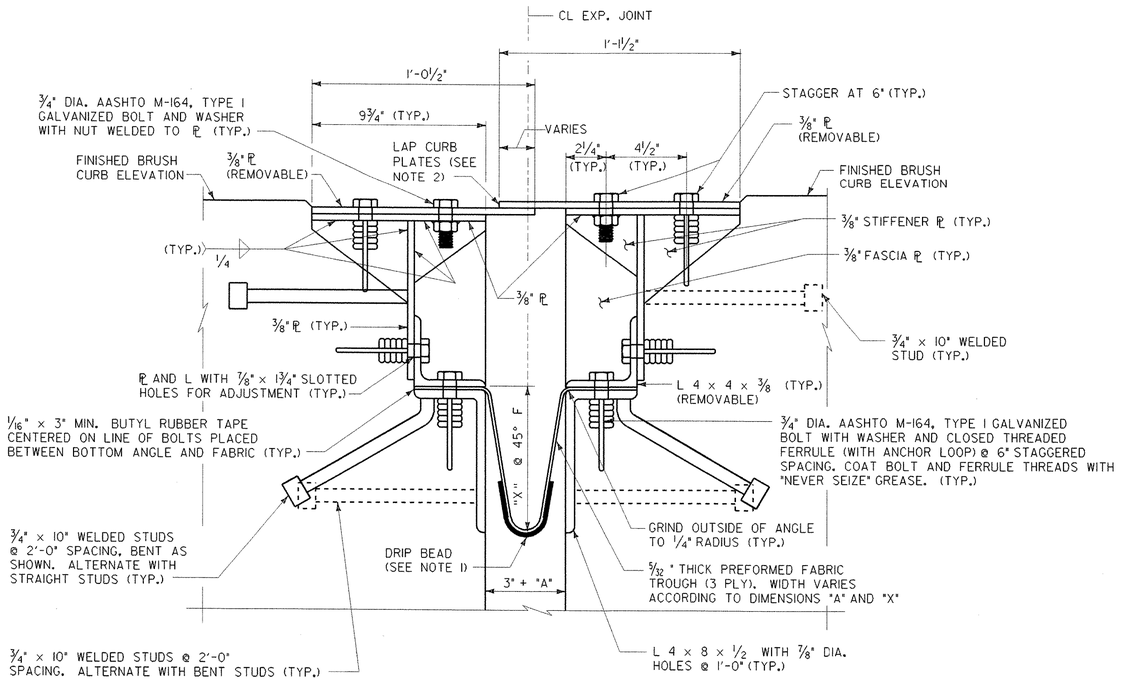
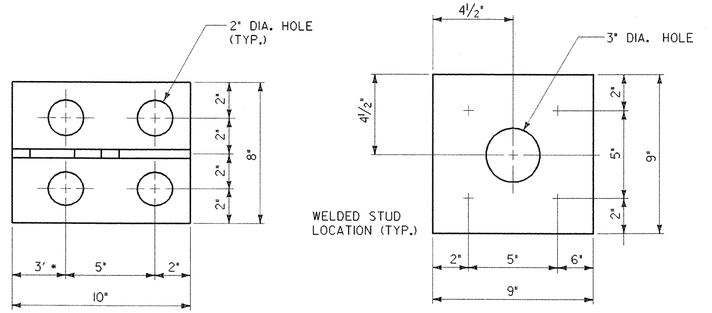


TYPICAL SECTION AT ARMORED BRUSH CURB (NORMAL TO CL BEARING)

SCALE: 3" = 1'-0"



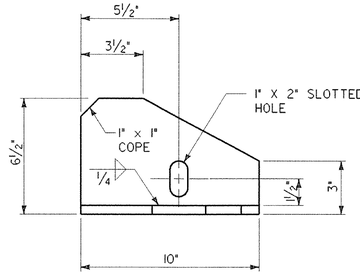
BRACKET PLAN

SCALE: 3" = 1'- 0"

PLATE PLAN (NOT GALVANIZED)

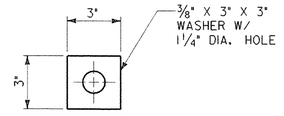
SCALE: 3" = 1'- 0"

NOTE: ALL PLATES ½" THICK



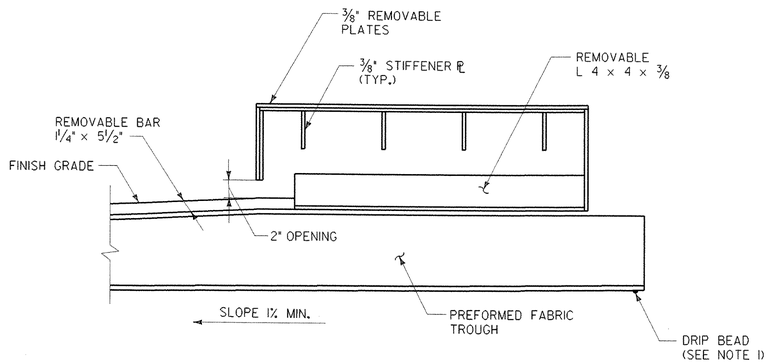
BRACKET ELEVATION

SCALE: 3" = 1'- 0"



WASHER FOR BRACKET

SCALE: 3" = 1'- 0"



LONGITUDINAL SECTION THROUGH ARMORED BRUSH CURB

N.T.S.

ANCHOR FERRULE DETAIL

SCALE: 3" = 1'- 0"

LOCATION	"A" DIMENSION							
	0° F	15° F	30° F	45° F	60° F	75° F	90° F	105° F
PIER NO 1	1¾"	1⅝"	1⅜"	1⅛"	1"	⅞"	⅝"	7/16"
PIER NO 2	2⅛"	1⅞"	1⅝"	1⅛"	1⅛"	⅝"	11/16"	½"

EXPANSION JOINT LOCATION	"X" @ 45° F		
	@ LEFT FASCIA	@ CL CONST.	@ RIGHT FASCIA
PIER NO 1	8"	8"	8"
PIER NO 2	8"	8"	8"

NOTES:

1. A DRIP BEAD OF ¼" × 7" STRIP OF PREFORMED MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH.
2. LAP CURB PLATES IN DIRECTION OF TRAFFIC. FOR DIRECTION OF LAP REFER TO TYPICAL EXPANSION JOINT PLAN, SHEET 23.

STATE OF VERMONT
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Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
EXPANSION JOINT AT PIER 1 & 4	
SHEET 3 OF 4	
Designed By E. JOHNSTON	Drawn By R J FERRANTE
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272jt3.dgn	
Bridge Sheet No.	Sheet 25 of 85

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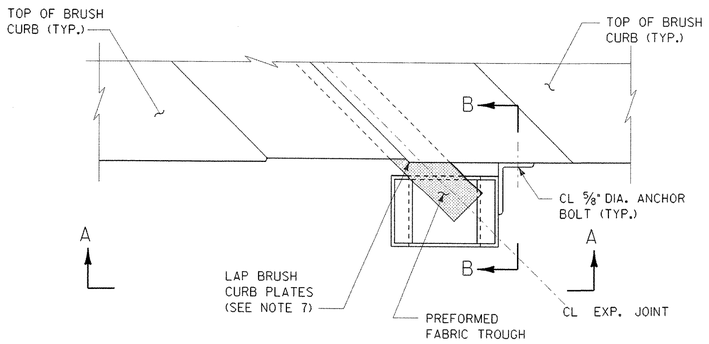
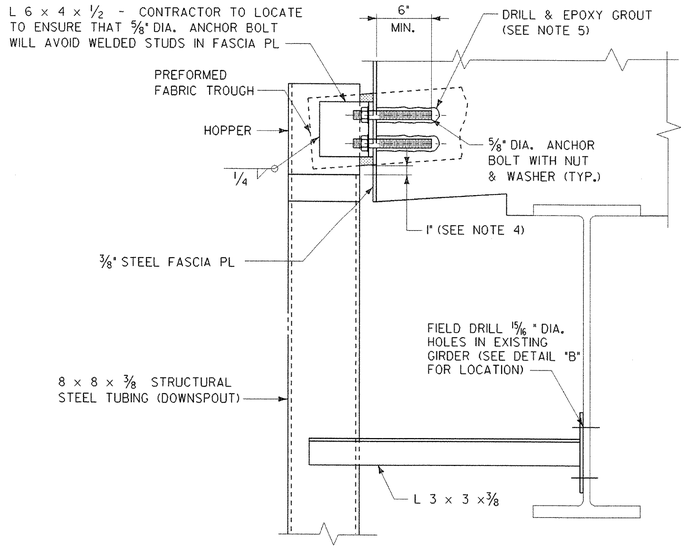


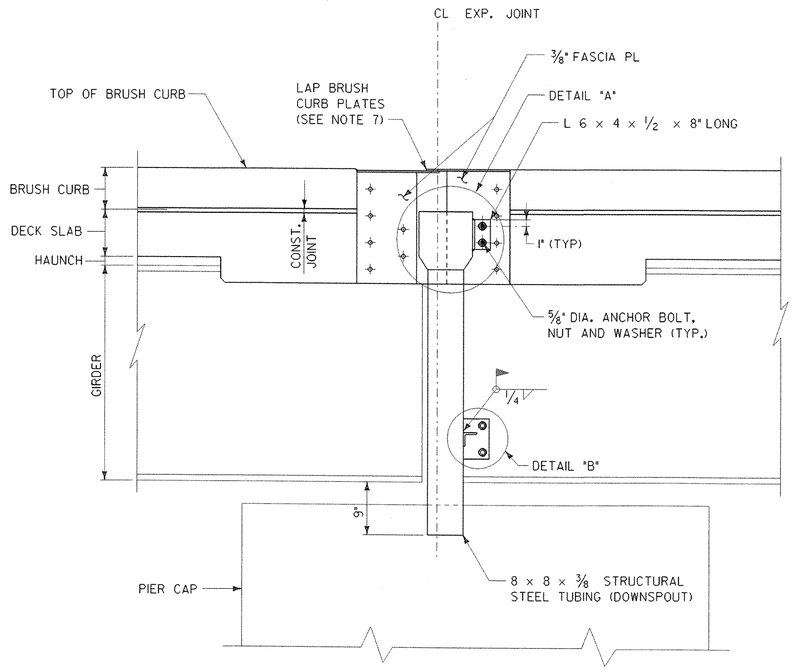
HOPPER LOCATION PLAN

SCALE: 1 1/2" = 1'-0"



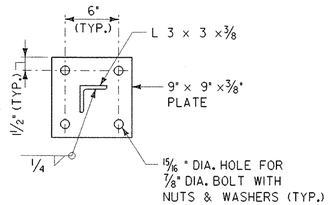
SECTION B-B

SCALE: 1 1/2" = 1'-0"



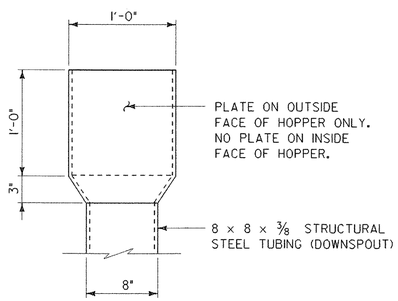
ELEVATION A-A

N.T.S.



DETAIL "B"

SCALE: 1 1/2" = 1'-0"



DETAIL "A"

SCALE: 1 1/2" = 1'-0"

1. NOTES:

WORK THIS SHEET WITH EXPANSION JOINT AT PIER 1 & 4 SHEETS 1, 2 & 3, SEE SHEETS 23 THROUGH 25.

2. HOPPERS AND ALL COMPONENTS SHALL BE AASHTO M270 GRADE 36 STEEL. STRUCTURAL TUBING (DOWNSPOUT) SHALL BE ASTM A-500 OR A-501 STEEL. ALL STEEL SHALL BE GALVANIZED OR METALIZED IN ACCORDANCE WITH SECTION 506.15 OF THE SPECIFICATIONS. ALL HOPPER AND DOWNSPOUT WORK SHALL BE PAID FOR UNDER ITEM 506.60, "STRUCTURAL STEEL".

3. HOPPERS SHALL BE FABRICATED FROM 3/8" STEEL PLATE. THE FABRICATION WELDS SHALL BE 1/4" FILLET WELDS ON THE INSIDE OF THE HOPPER AND SHALL BE FULL LENGTH TO ENSURE A WATERTIGHT CONTAINER.

4. THE HOPPERS SHALL BE PLACED TO LEAVE A ONE INCH VERTICAL GAP BETWEEN THE BOTTOM OF THE TROUGH AND THE HOPPER. THE TROUGH SHOULD BE ENCLOSED AS MUCH AS POSSIBLE BY THE HOPPER BUT SHOULD NOT BE BENT OR BUCKLED TO RESTRICT THE FLOW OF WATER.

5. ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS, AND BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 506.15. ANCHOR BOLTS SHALL BE DRILLED AND EPOXY GROUTED 6" MINIMUM INTO THE CONCRETE. DRILL AND EPOXY GROUT SYSTEM SHALL BE:
   - DAYTON SUPERIOR SURE-ANCHOR J-51 SYSTEM
   - HILTI, INC. HIT HY-150 SYSTEM
   - UNITEX PRO-POXY 300 FAST SYSTEM

   OR EQUIVALENT APPROVED BY VAOT MATERIALS SECTION. ALL COSTS FOR DRILLING AND EPOXY GROUTING ANCHOR BOLTS SHALL BE INCLUDED AS PART OF ITEM 506.60, "STRUCTURAL STEEL".

6. STRAPS SHALL NOT BE BENT IN THE FIELD.

7. LAP CURB PLATES IN DIRECTION OF TRAFFIC. FOR DIRECTION OF LAP REFER TO TYPICAL EXPANSION JOINT PLAN ON SHEET 23.

8. PROVIDE A SIX FOOT SQUARE PAD ONE FOOT THICK CONSISTING OF GEOTEXTILE UNDER STONE FILL BENEATH EACH DOWNSPOUT. WORK SHALL BE PAID FOR UNDER ITEM 613.10, "STONE TYPE I"

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EXPANSION JOINT AT PIER 1 & 4	
SHEET 4 OF 4	
Designed By E. JOHNSTON	Drawn By R J FERRANTE
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272jt4.dgn	
Bridge Sheet No.	Sheet 26 of 85

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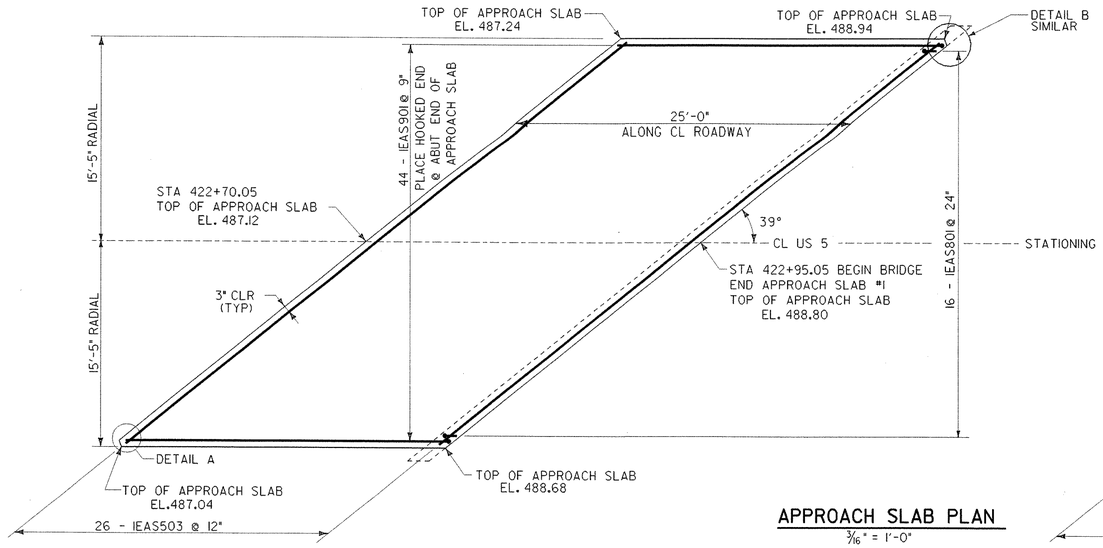
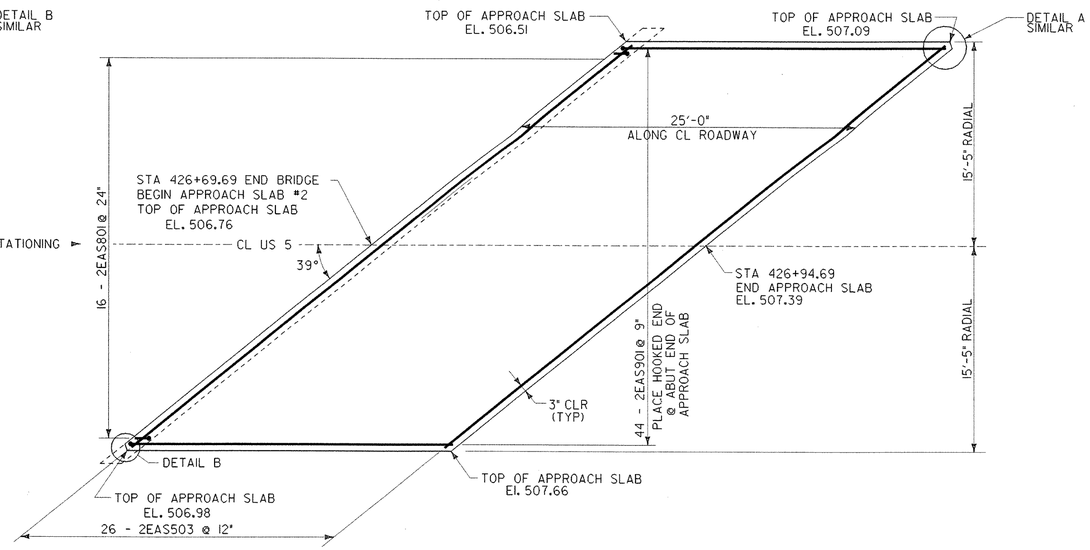


APPROACH SLAB PLAN

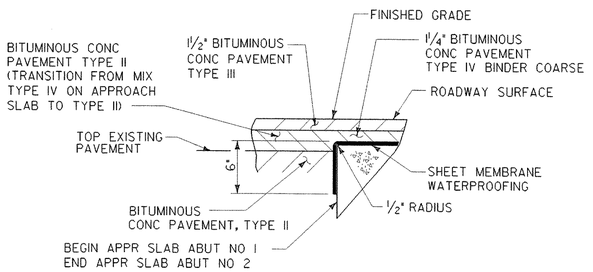
3/16" = 1'-0"



STATIONING

NOTES:

1. 3" CLEAR UNLESS OTHERWISE NOTED.
2. NOT USED
3. FILLET EXISTS IN CORNER OF BACK WALL. APPROACH SLAB TO BE POUR AGAINST BACK WALL. APPLY BOND BREAKER TO BACK WALL PRIOR TO POUR.



DETAIL FOR SHEET MEMBRANE AT APPROACH SLAB END

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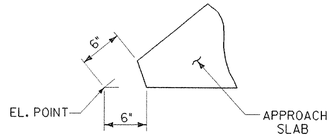

DETAIL A

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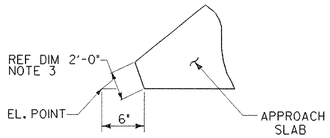
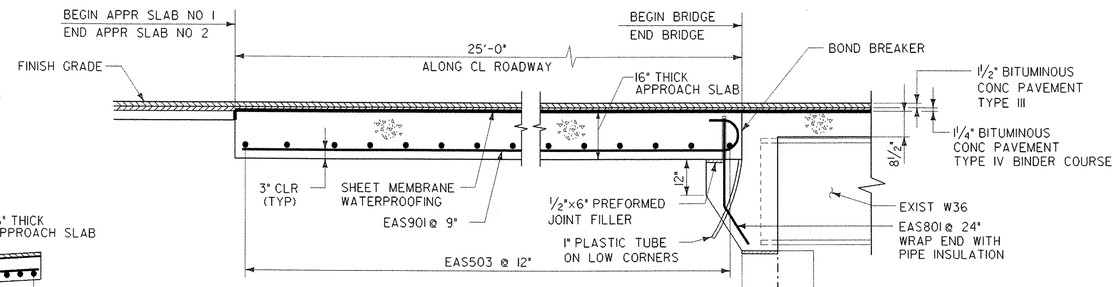


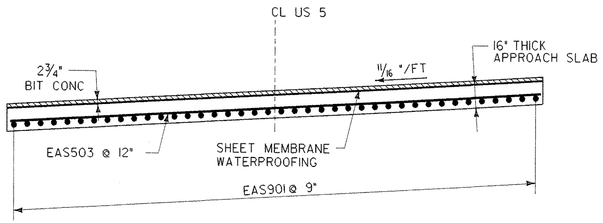
DETAIL B

NTS



TYP APPROACH SLAB CROSS SECTION

½" = 1'-0"



TYPICAL APPROACH SLAB SECTION

¼" = 1'-0"

SCALE ½" = 1'-0
1 0 1 2

SCALE ¼" = 1'-0
1 0 2 4 6

SCALE 3/16" = 1'-0
1 0 2 4 6 8

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
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Highway No. I-91	Surv. Sta.
APPROACH SLAB DETAILS	
Designed By S. YONGHO	Drawn By J. HORAN
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272as.dgn	
Bridge Sheet No.	Sheet 27 of 85

STONE & WEBSTER, INC.

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EXISTING SUBSTRUCTURE REPAIR NOTES:

1. THIS WORK SHALL INCLUDE REMOVAL AND DISPOSAL OF UNSOUND AND DELAMINATED CONCRETE FROM ALL ABUTMENTS AND PIERS AS DIRECTED BY THE ENGINEER. THE PREPARED SURFACES SHALL BE THOROUGHLY SANDBLASTED TO REMOVE ALL LOOSE MATERIAL AND ANY CONTAMINANTS OR EFFLORESCENCE. THE REINFORCING STEEL (IF EXPOSED), SHALL BE SANDBLASTED. THE MATERIAL USED TO FILL A PATCH SHALL BE PLACED AND FINISHED OR FORMED SO THAT THE FINAL SURFACE WILL HAVE THE SAME SCORE MARKS AND EXTERIOR FACE APPEARANCE AS THE ORIGINAL SURFACES BEING REPAIRED. THE SURFACE SHALL BE THOROUGHLY WETTED PRIOR TO PLACEMENT OF PATCHING MATERIAL OR NEW CONCRETE. INMEDIATELY PRIOR TO PLACEMENT, THE SURFACE SHALL BE COATED WITH NEAT CEMENT PASTE, MIXED TO CONSISTENCY OF THICK LATEX PAINT, AND THOROUGHLY BRUSHED INTO THE SURFACE. WHEN "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780 IS USED, THE BONDING AGENT (IF ANY REQUIRED) AND ITS APPLICATION PROCEDURE SHALL COMPLY WITH THE REQUIREMENTS OF THE PATCHING MATERIAL MANUFACTURER. PAYMENT FOR BONDING AGENT WILL BE SUBSIDIARY TO ITEM 580.13, 580.14 OR 580.15.

2. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.13, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MAXIMUM DEPTH OF THE OUTSIDE FACE OF THE REINFORCING STEEL. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.13, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I". THE FILLING MATERIAL SHALL BE "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780.02. THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF I INCH. IF MORE THAN $\frac{1}{4}$ OF THE REBAR IS EXPOSED, OR THE BOND BETWEEN THE REBAR AND THE CONCRETE IS BROKEN, THEN PROCEED TO ITEM 508.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II".

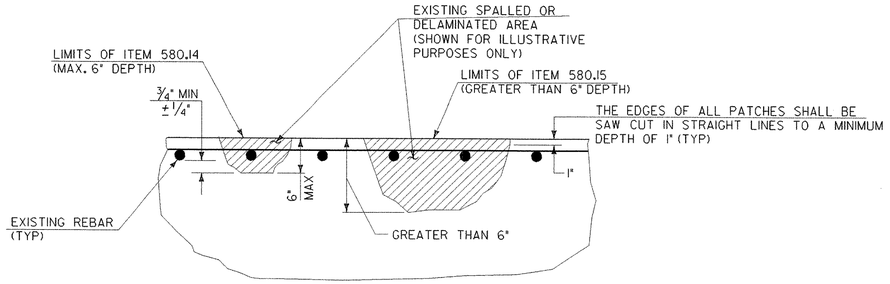
3. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MINIMUM DEPTH OF $\frac{3}{4}$" +/- $\frac{1}{4}$" INSIDE THE INSIDE FACE OF REINFORCING STEEL AND TO A MAXIMUM DEPTH OF 6" FROM THE EXISTING CONCRETE SURFACE. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II". THE FILLING MATERIAL MAY BE EITHER "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780, "CONCRETE CLASS AA", CLASS A, OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1INCH.

4. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.15 "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A DEPTH OF GREATER THAN 6". ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.15, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III". THE FILLING MATERIAL MAY BE EITHER "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780 OR "CONCRETE CLASS AA", CLASS A, CLASS B OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1INCH.

5. IF PNEUMATICALLY APPLIED CONCRETE IS SELECTED FOR REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II OR III, THEN THIS TYPE OF CONCRETE REPAIR SHALL BE CONFINED ONLY TO VERTICAL AND OVERHEAD SURFACES OF THE SUBSTRUCTURE. ALSO, THE BRIDGE BEARINGS AND GIRDERS SHOULD BE COMPLETELY PROTECTED FROM REBOUND MATERIAL DURING PNEUMATICALLY APPLIED CONCRETE APPLICATION PROCEDURES.

6. THE ENGINEER SHALL ORDER REPLACEMENT OF ANY EXISTING SUBSTRUCTURE REINFORCING STEEL THAT IS DETERIORATED (WITH MORE THAN 25% SECTION LOSS) WITH NEW REINFORCING STEEL OF THE SAME SIZE. ALL REINFORCING STEEL SHALL HAVE AN APPROPRIATE LAP SPLICE.

7. THE SPALLED AREAS SHOWN ARE ONLY ESTIMATES, AND THE EXACT AREA WILL BE DETERMINED BY THE RESIDENT ENGINEER IN THE FIELD.



TYPICAL DETAIL SHOWING LIMITS OF ITEMS 580.14 AND 580.15 REPAIR OF CONCRETE AT ABUTMENT SURFACE CLASS II OR CLASS III

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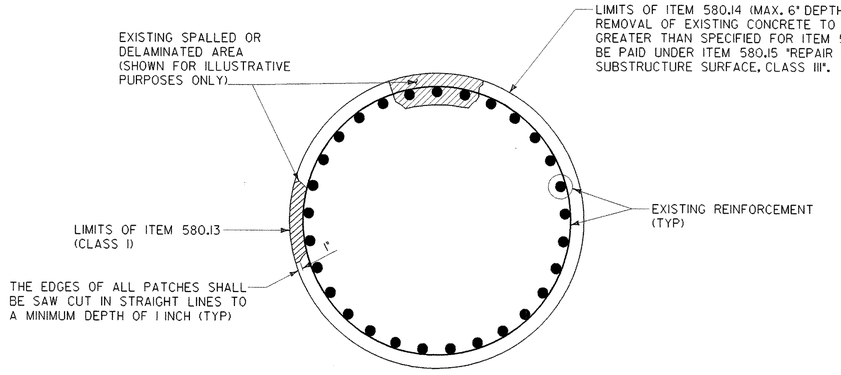
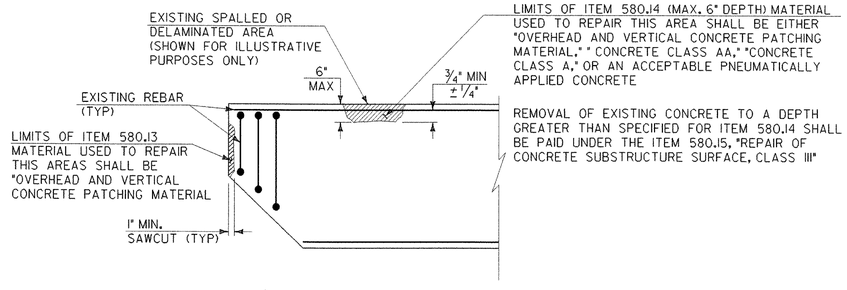


TYPICAL CONCRETE COLUMN DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



TYPICAL DETAIL SHOWING LIMITS OF ITEMS 580.13, 580.14 581.15 REPAIR OF CONCRETE PIER CAP CLASS I, CLASS II, OR CLASS III

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
SUBSTRUCTURE REPAIR NOTES AND DETAILS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272ssr.dgn	
Bridge Sheet No.	Sheet 28 of 85

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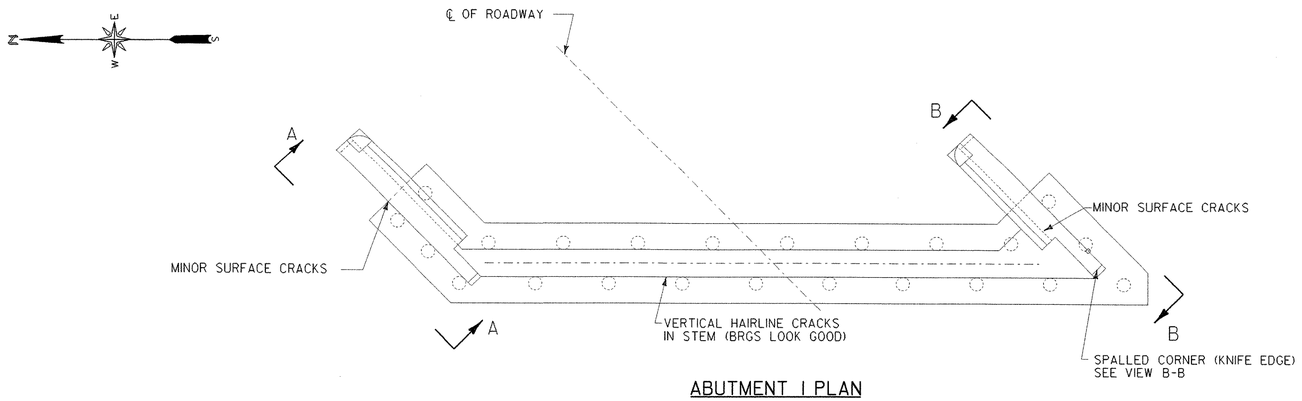
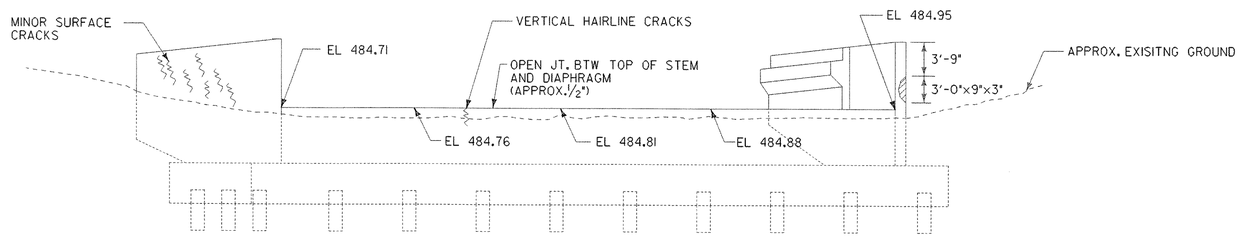
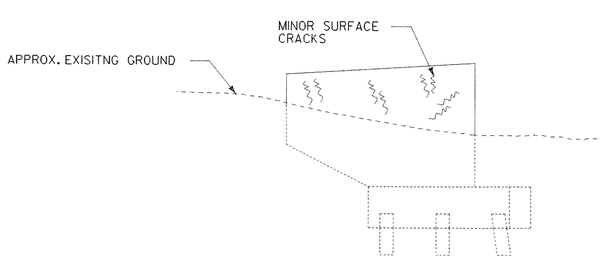


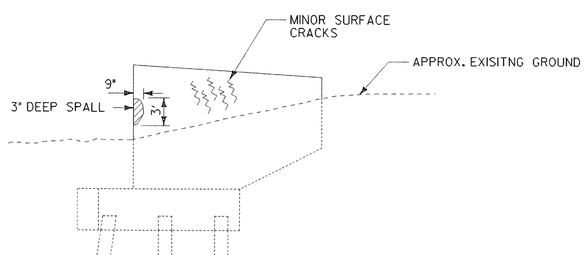
ABUTMENT 1 PLAN



ABUTMENT 1 ELEVATION



VIEW A-A



VIEW B-B

NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.

LEGEND:

SPALL

SURFACE CRACK

SCALE 3/16" - 1'-0

1 0 2 4 6 8

10-DEC-2002

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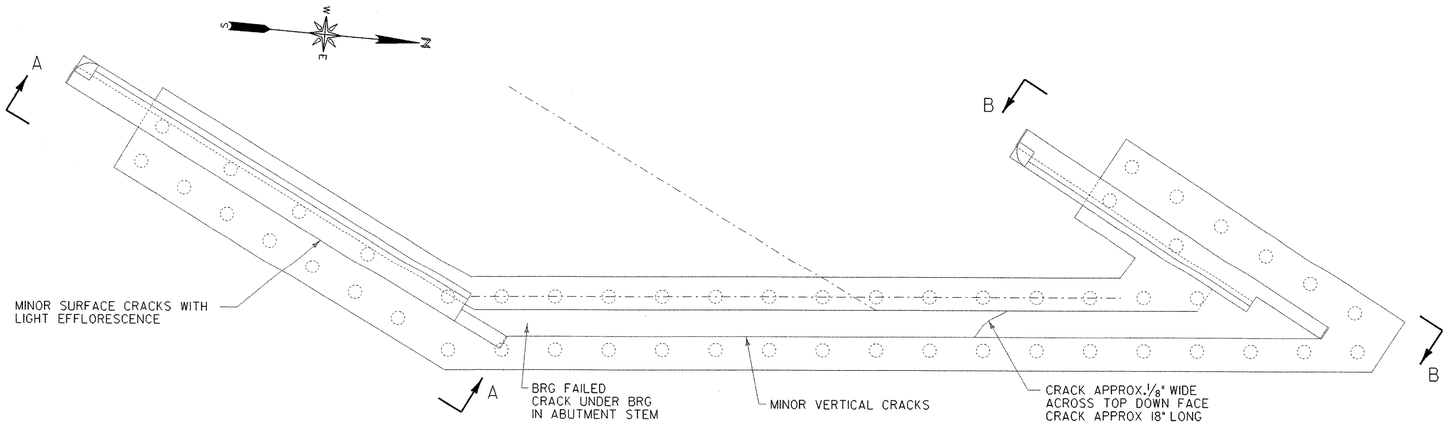
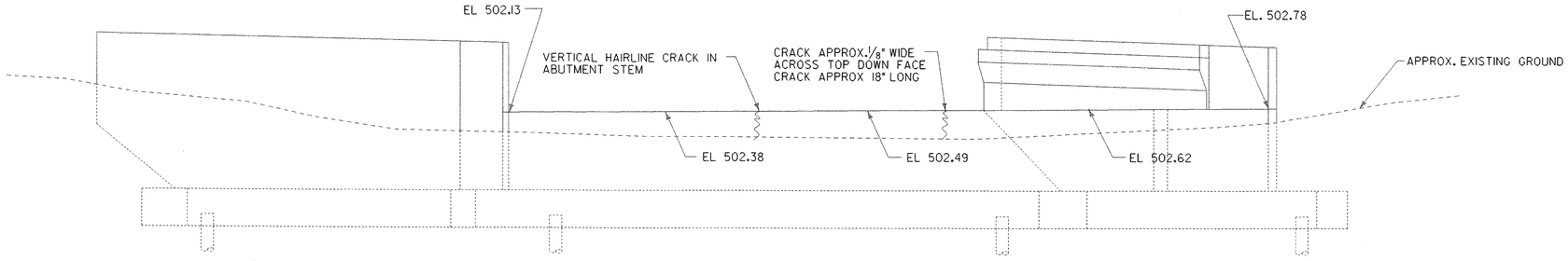
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.
ABUTMENT 1	
REPAIR AREAS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272ab1.dgn	
Bridge Sheet No.	Sheet 29 of 85

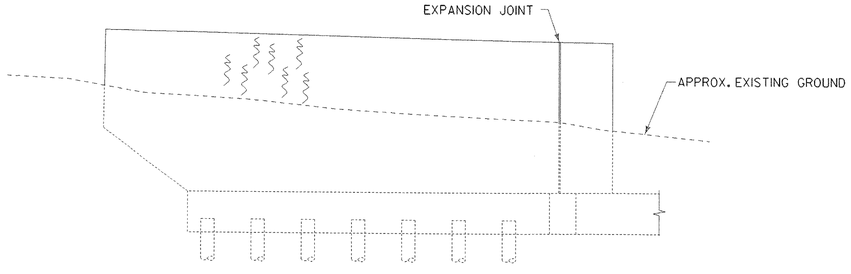
STONE & WEBSTER, INC.



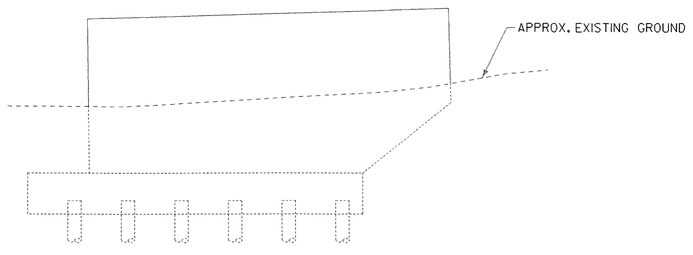
ABUTMENT 2 PLAN



ABUTMENT 2 ELEVATION



VIEW A-A



VIEW B-B

NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.

LEGEND:

- SPALL
- DELANIMATION
- SURFACE CRACK

SCALE 3/16" = 1'-0

1 0 2 4 6 8

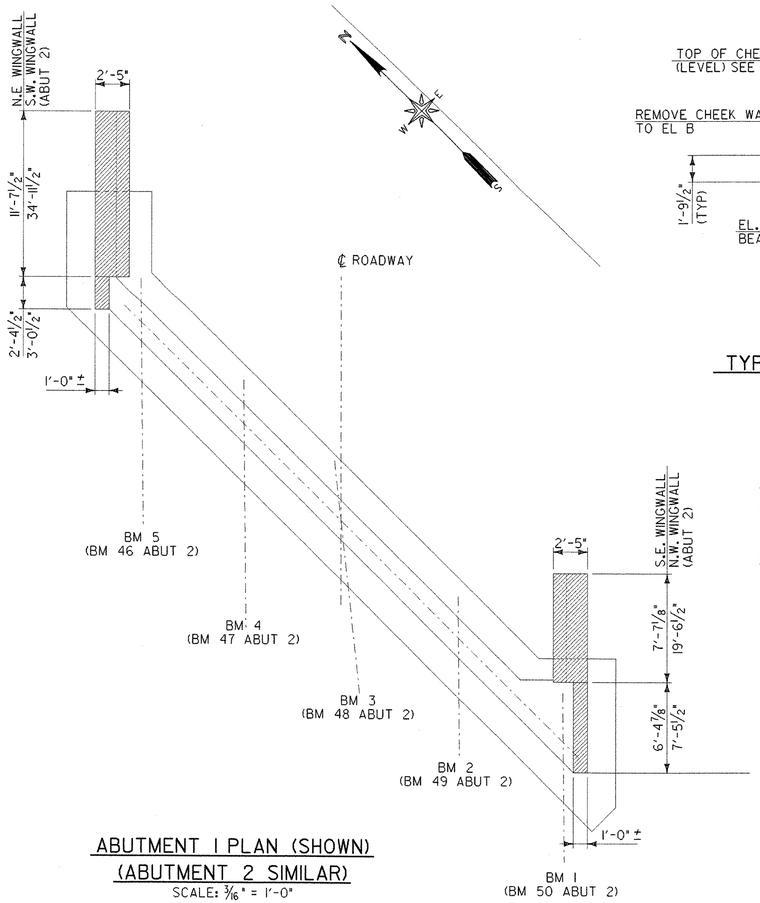
10-DEC-2002

v:\Struc\working\za272ab2.dgn

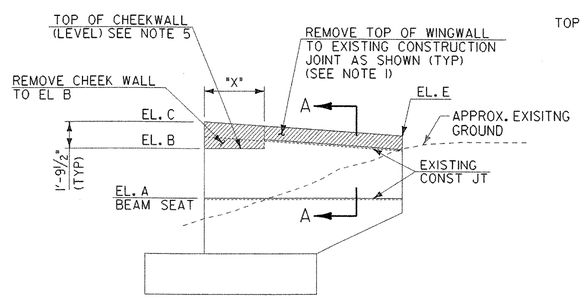
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
ABUTMENT 2	
REPAIR AREAS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272ab2.dgn	
Bridge Sheet No.	Sheet 30 of 85

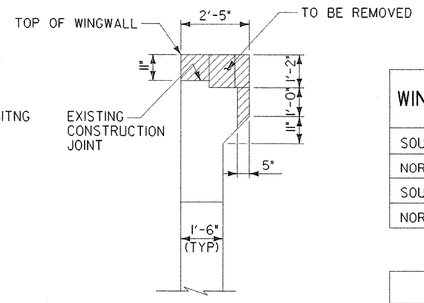
STONE & WEBSTER, INC.



ABUTMENT 1 PLAN (SHOWN)
(ABUTMENT 2 SIMILAR)
SCALE: 3/16" = 1'-0"



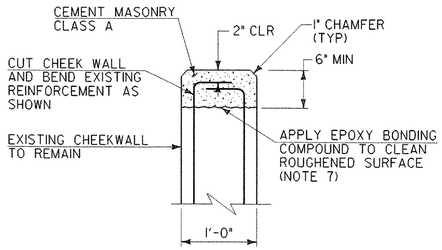
TYPICAL WINGWALL ELEVATION
SCALE: 3/16" = 1'-0"



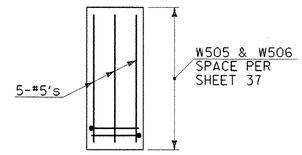
SECTION A
SCALE: 3/8" = 1'-0"

WINGWALL	TOP OF WINGWALL ELEVATIONS (FT)				DIMENSIONS
	A	B	C	E	X (FT)
SOUTH EAST	484.71	488.53	490.32	489.37	6'-4⅞"
NORTH EAST	484.95	488.06	489.85	488.91	2'-4½"
SOUTH WEST	502.13	505.80	507.59	508.31	3'-0½"
NORTH WEST	502.18	506.20	507.99	508.70	7'-5½"

	BEAM SEAT ELEVATIONS				
ABUTMENT 1	BM 1	BM 2	BM 3	BM 4	BM 5
	484.98	484.91	484.84	484.77	484.72
ABUTMENT 2	BM 46	BM 47	BM 48	BM 49	BM 50
	502.30	502.43	502.55	502.65	502.76



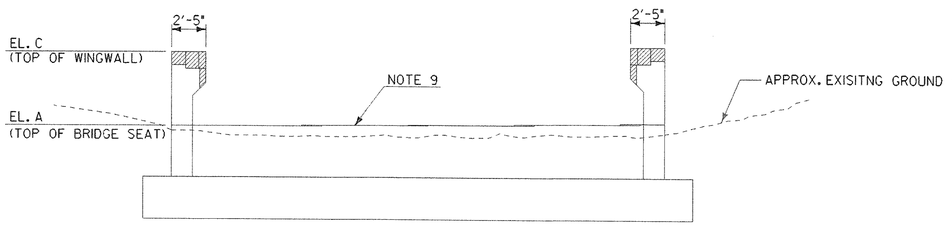
TYPICAL DETAIL FOR CONCRETE
CAP AT EXISTING CHEEKWALL
SCALE: 1" = 1'-0"



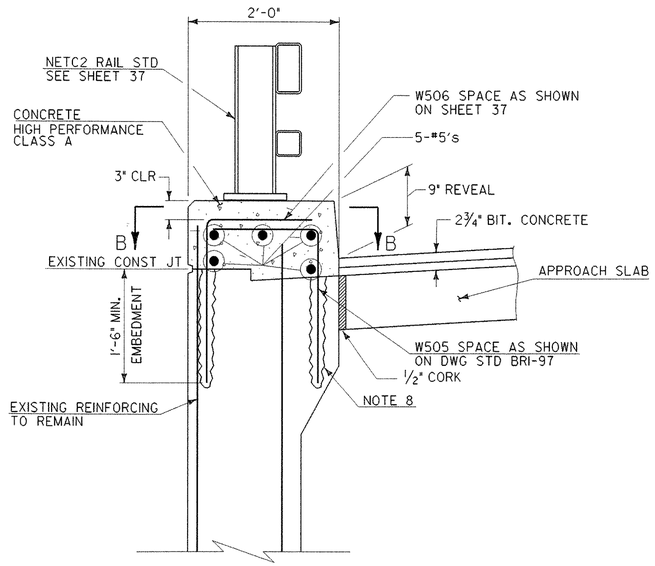
SECTION B
NTS

NOTES:

1. ALL EXISTING VERTICAL REINFORCEMENT STEEL IN WINGWALLS AND CHEEK WALLS SHALL BE RETAINED. CUT EXISTING REINFORCING TO FIT PROPOSED WINGWALL AND CHEEK WALL CONFIGURATION.
2. REMOVAL OF WINGWALL AND CHEEKWALL MASONRY, SHALL BE PAID AS ITEM 529.25, 'REMOVAL OF CONCRETE OR MASONRY'. EXCAVATION AND BACKFILLING OF EXISTING GROUND REQUIRED TO PERFORM THIS WORK SHALL BE INCLUDED IN ITEM 529.25.
3. SEE SHEET 28 FOR SUBSTRUCTURE REPAIR NOTES AND DETAILS.
4. ALL DIMENSIONS ARE APPROX. AND SHOULD BE VERIFIED IN THE FIELD.
5. TOP OF CHEEKWALL TO BE AT LEAST 6" CLEAR OF SLAB.
6. FOR CONCRETE CURB DIMENSIONS SEE SHEET 39.
7. EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 BETWEEN EXISTING AND NEW CONCRETE SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURE'S RECOMENDATIONS.
8. FILL DRILLED HOLES WITH NON-SHRINK, NON-METALLIC EPOXY GROUT AFTER PLACING REINFORCEMENT.
9. USE NON-SHRINK NON-METALIC EPOXY GROUT TO BUILD UP EXISTING BEAM SEAT TO THE BEAM SEAT ELEVATION. APPLY EPOXY BONDING COMPOUND TO TOP OF EXISTING ROUGHENED CONCRETE PRIOR TO PLACING GROUT.



ABUTMENT 1 ELEVATION (SHOWN)
(ABUTMENT 2 SIMILAR)
SCALE: 3/16" = 1'-0"



TYPICAL WINGWALL DETAIL
SCALE: 1" = 1'-0"

LEGEND:

MASONRY REMOVAL

SCALE 1" = 1'-0
1 9 6 3 0 1 2

SCALE 3/16" = 1'-0
1 0 2 4 6 8

SCALE 3/8" = 1'-0
1 0 1 2 3 4

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
ABUTMENT MODIFICATIONS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272abm.dgn	
Bridge Sheet No.	Sheet 31 of 85

STONE & WEBSTER, INC.

04-FEB-2003

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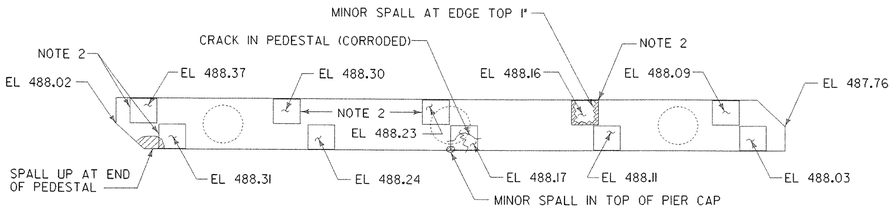
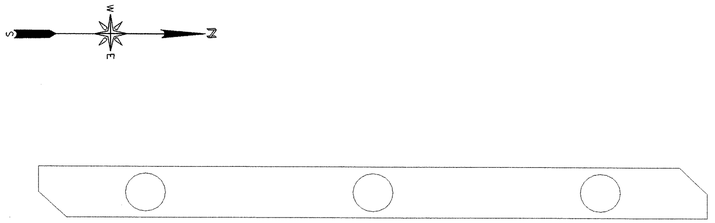
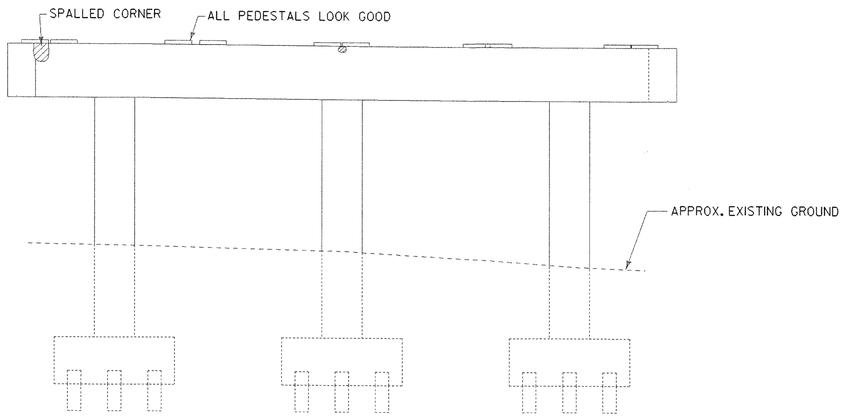


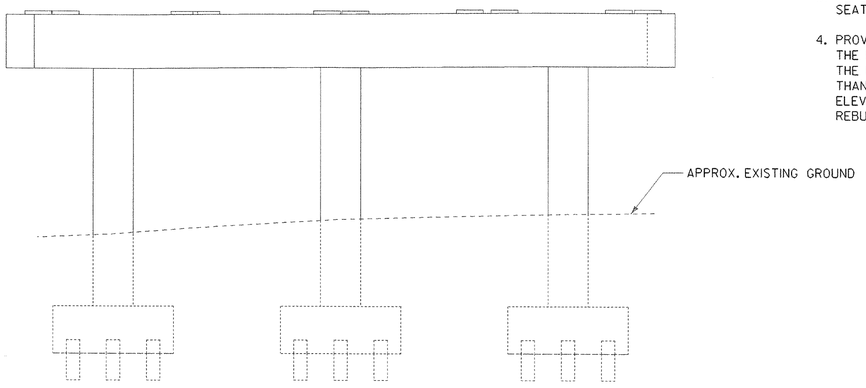
PIER I CAP PLAN - TOP



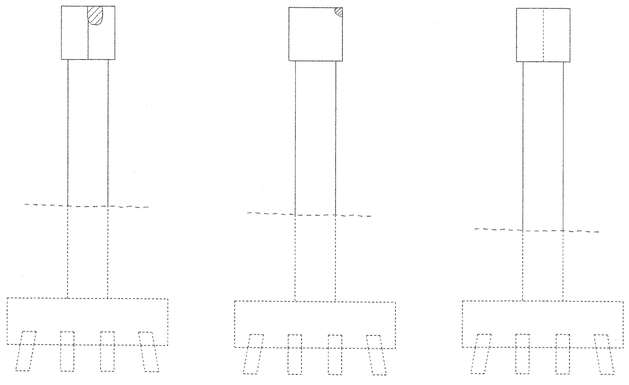
PIER I CAP PLAN - BOTTOM (LOOKING UP)



EAST ELEVATION



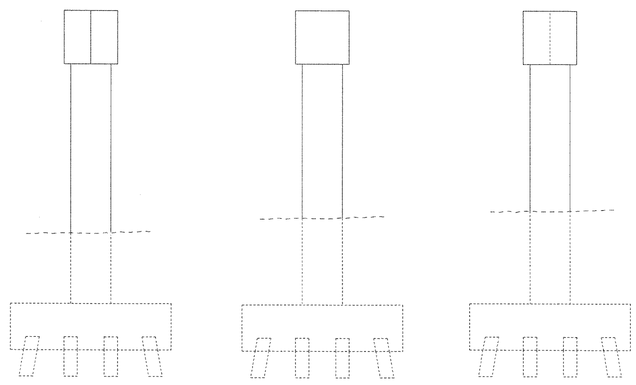
WEST ELEVATION



SOUTH FACE SOUTH COLUMN

SOUTH FACE MIDDLE COLUMN

SOUTH FACE NORTH COLUMN



NORTH FACE NORTH COLUMN

NORTH FACE MIDDLE COLUMN

NORTH FACE SOUTH COLUMN

NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.

LEGEND:

- SPALL
- DELANIMATION
- SURFACE CRACK

SCALE 3/16" = 1'-0
1 0 2 4 6 8

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta. / Surv. Sta.
PIER NO. I	
REPAIR AREAS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272prl.dgn	
Bridge Sheet No.	Sheet 32 of 85

STONE & WEBSTER, INC.

10-DEC-2002

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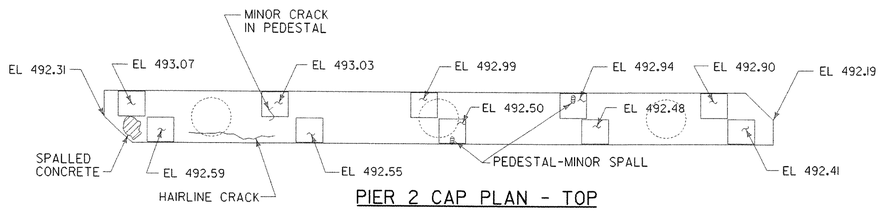
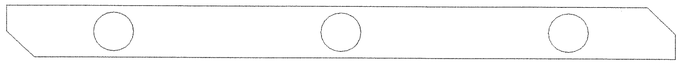
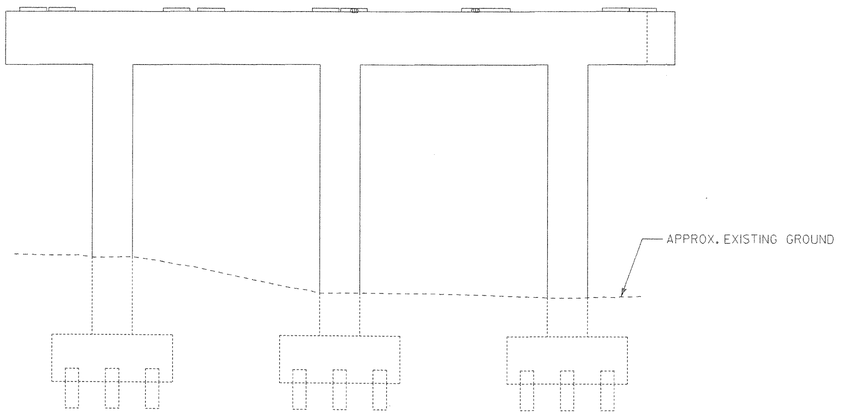


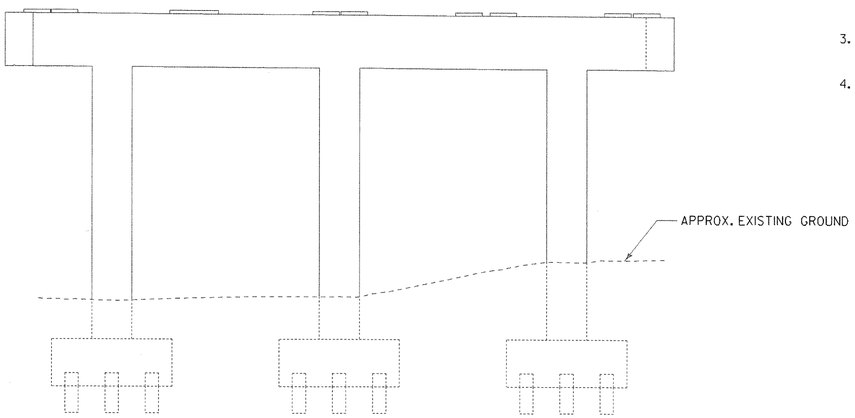
PIER 2 CAP PLAN - TOP



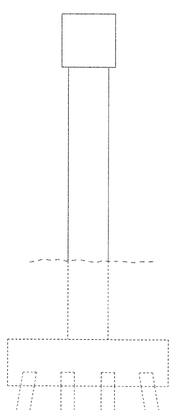
PIER 2 CAP PLAN - BOTTOM (LOOKING UP)



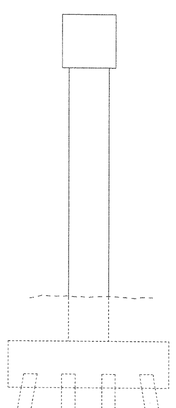
EAST ELEVATION



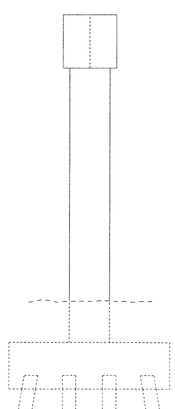
WEST ELEVATION



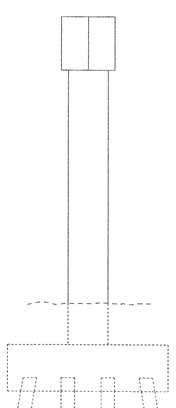
SOUTH FACE
SOUTH COLUMN



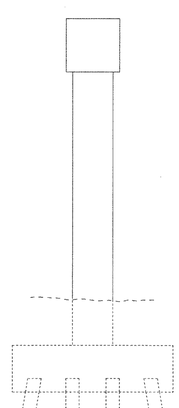
SOUTH FACE
MIDDLE COLUMN



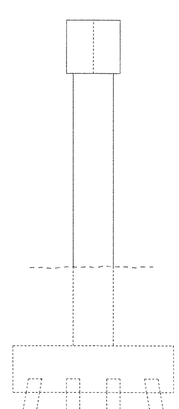
SOUTH FACE
NORTH COLUMN



NORTH FACE
NORTH COLUMN



NORTH FACE
MIDDLE COLUMN



NORTH FACE
SOUTH COLUMN

NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.

LEGEND:

SPALL

DELANIMATION

SURFACE CRACK

SCALE 3/16" = 1'-0
1 0 2 4 6 8

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.
PIER NO. 2	
REPAIR AREAS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272pr2.dgn	
Bridge Sheet No.	Sheet 33 of 85

STONE & WEBSTER, INC.

10-DEC-2002

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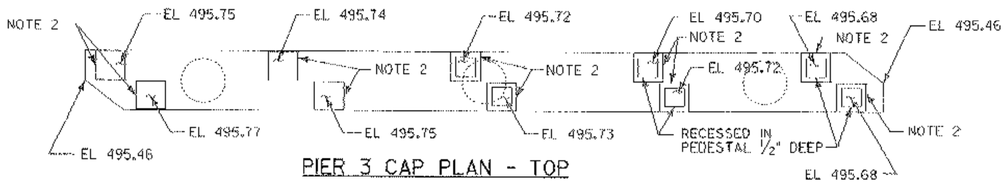
ALL PEDESTALS HAVE RECESSES

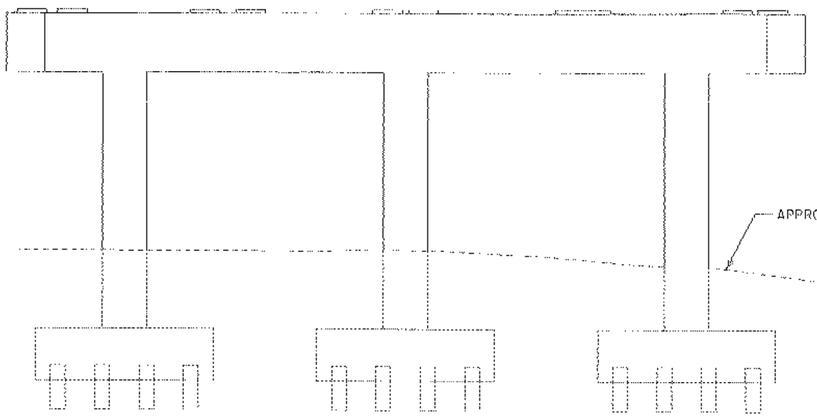


PIER 3 CAP PLAN - TOP

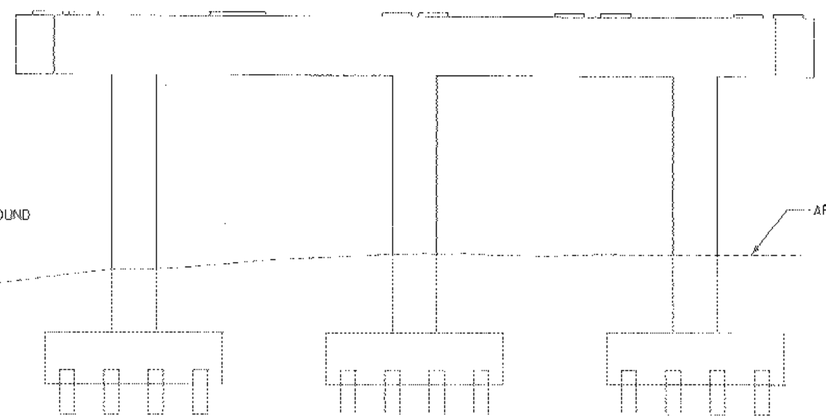
PIER 3 CAP PLAN - BOTTOM (LOOKING UP)

NOTES:

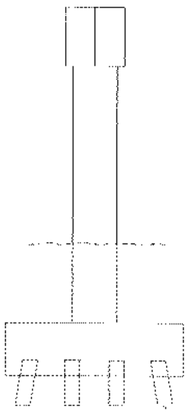
1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.



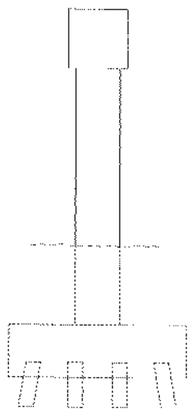
EAST ELEVATION



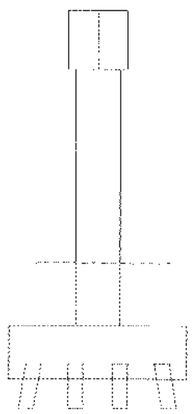
WEST ELEVATION



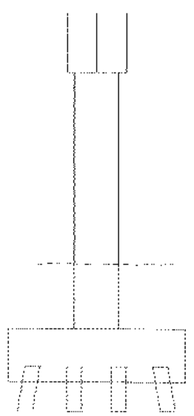
SOUTH FACE
SOUTH COLUMN



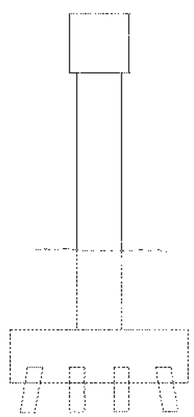
SOUTH FACE
MIDDLE COLUMN



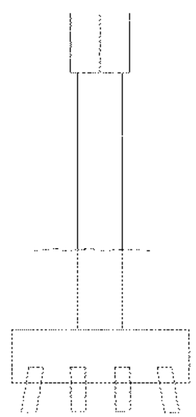
SOUTH FACE
NORTH COLUMN



NORTH FACE
NORTH COLUMN



NORTH FACE
MIDDLE COLUMN



NORTH FACE
SOUTH COLUMN

LEGEND:

- SPALL
- DELAMINATION
- SURFACE CRACK

SCALE 3/16" = 1'-0
1 0 2 4 6 8

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.
PIER NO. 3	
REPAIR AREAS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name 2a272pr3.dgn	
Bridge Sheet No.	Sheet 34 of 85

STONE & WEBSTER, INC.

10-DEC-2002
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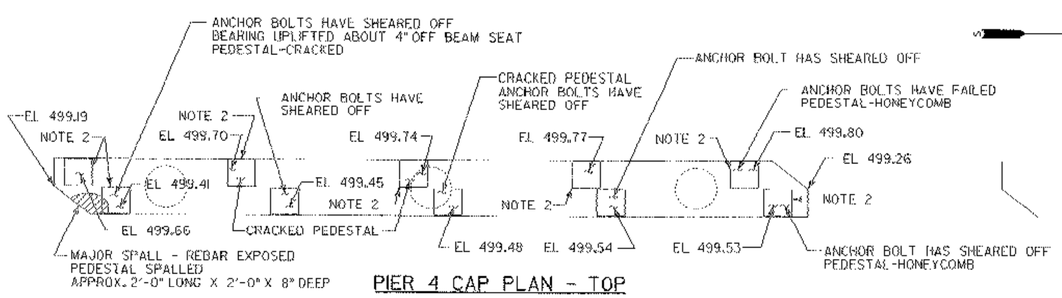
BEARING MASONRY PLATES ARE RECESSED IN ALL PEDESTALS

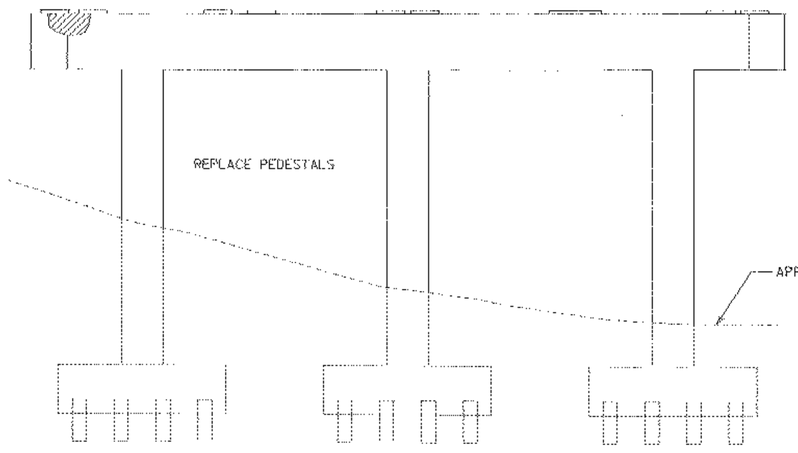


PIER 4 CAP PLAN - TOP

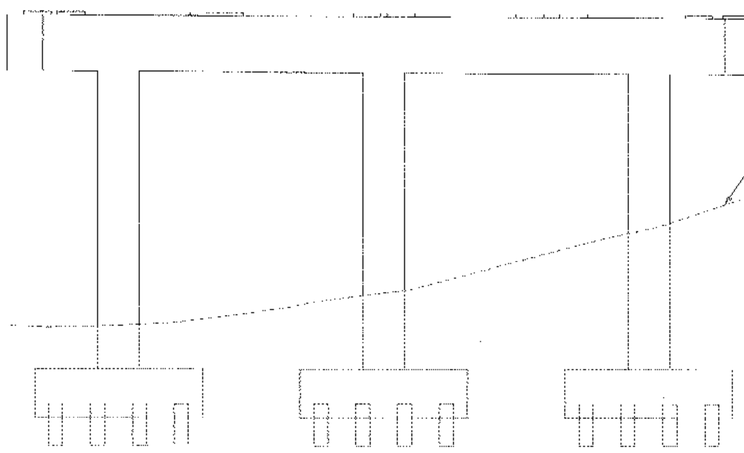
PIER 4 CAP PLAN - BOTTOM (LOOKING UP)

NOTES:

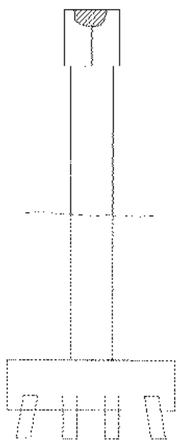
1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.



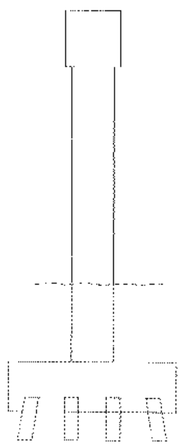
EAST ELEVATION



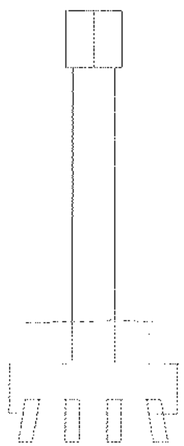
WEST ELEVATION



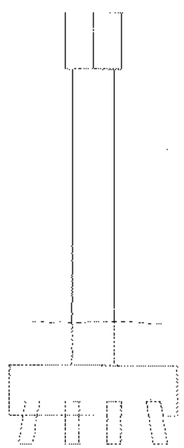
SOUTH FACE
SOUTH COLUMN



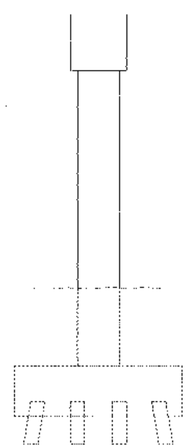
SOUTH FACE
MIDDLE COLUMN



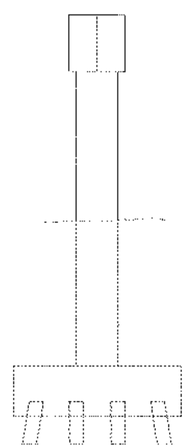
SOUTH FACE
NORTH COLUMN



NORTH FACE
NORTH COLUMN



NORTH FACE
MIDDLE COLUMN



NORTH FACE
SOUTH COLUMN

LEGEND:

- SPALL
- DELAMINATION
- SURFACE CRACK

SCALE 3/16" = 1'-0
0 2 4 6 8

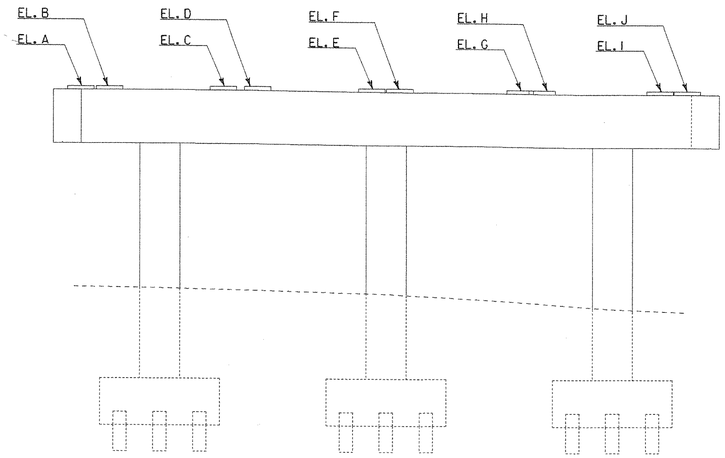
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
PIER NO. 4	
REPAIR AREAS	
Designed By S. YONGHO	Drawn By N.HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272pr4.dgn	
Bridge Sheet No.	Sheet 35 of 85

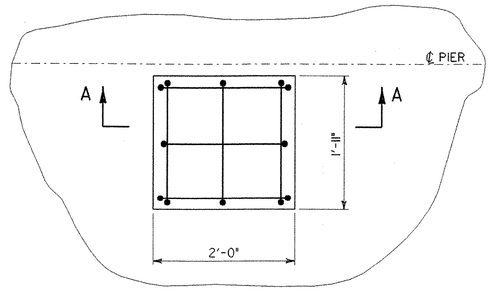
STONE & WEBSTER, INC.

10-DEC-2002

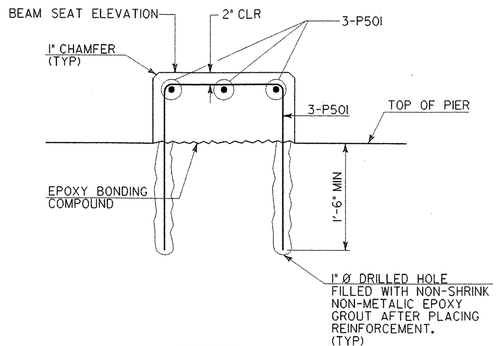
\Structures\za272pr4.dgn



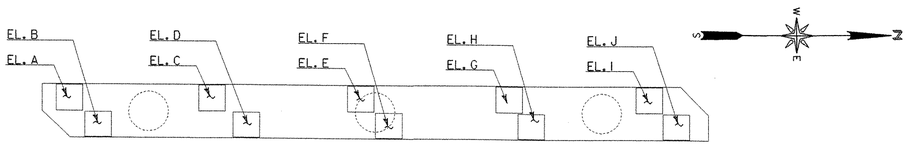
ELEVATION



PLAN VIEW REBUILT PEDESTAL
SCALE: 1"=1'-0"



SECTION A
SCALE: 1"=1'-0"



PIER CAP PLAN

PIER BEAM SEAT ELEVATIONS (NOTE 2)										
PIER	A	B	C	D	E	F	G	H	I	J
1	488.36	488.35	488.29	488.28	488.23	488.21	488.16	488.15	488.09	488.08
2	493.09	492.78	493.06	492.74	493.02	492.70	492.98	492.66	492.94	492.62
3	495.68	495.65	495.67	495.64	495.66	495.62	495.64	495.61	495.63	495.58
4	499.56	499.45	499.61	499.49	499.66	499.54	499.70	499.57	499.73	499.61

NOTES:

1. REBUILD PEDESTAL AS NOTED ON SHEETS 32 THROUGH 35.
2. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 1.
3. THE REMOVAL OF EXISTING PIER PEDESTALS WILL BE PAID FOR UNDER ITEM 529.25 "REMOVAL OF CONCRETE OR MASONRY". THE NEW PEDESTAL CONCRETE WILL BE PAID FOR UNDER ITEM 501.33 "CONCRETE, HIGH PERFORMANCE CLASS A".
4. **THE PEDESTALS TO BE REMOVED AND REPLACED ARE NOTED ON SHEETS 32 THROUGH 35 IN THE "PIER CAP PLAN – TOP" VIEW AS "NOTE 2". ANY PEDESTAL IN THESE VIEWS WITH THE WORDS "NOTE 2" POINTING TO A PEDESTAL MEANS PLAN ON REMOVING AND REPLACING THIS PEDESTAL.**

SCALE 3/16" = 1'-0
1 0 2 4 6 8

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
PIER REPAIRS	
Designed By S. YONGHO	Drawn By N. HERRERA
Checked By S. YONGHO Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272pr.dgn	
Bridge Sheet No.	Sheet 36 of 85

STONE & WEBSTER, INC.

04-FEB-2003

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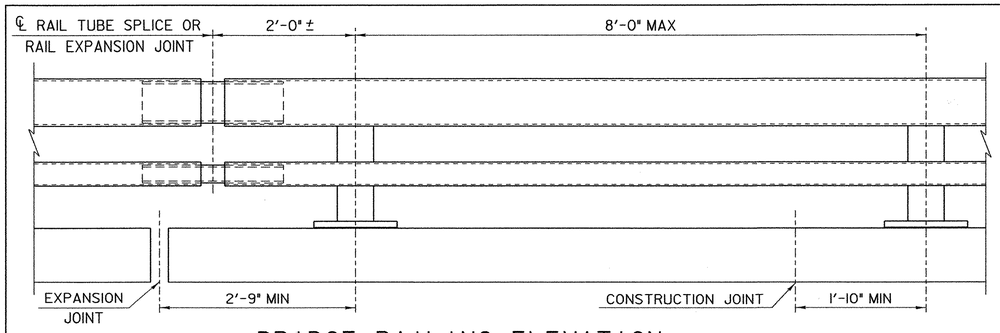
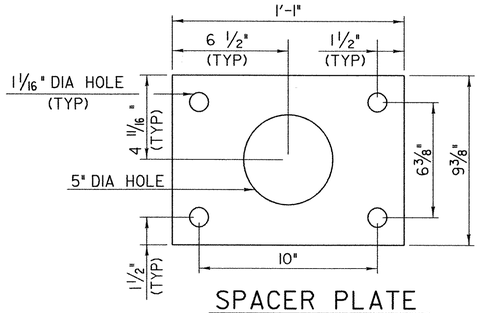
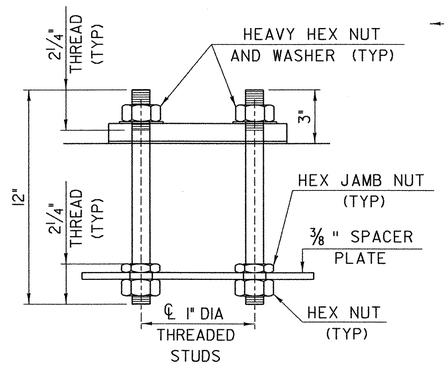


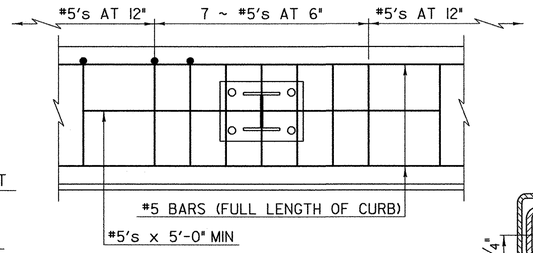
BRIDGE RAILING ELEVATION



SPACER PLATE

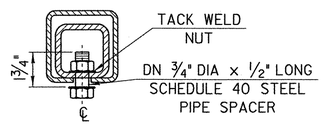


RAIL POST ANCHORAGE



CURB REINFORCING PLAN

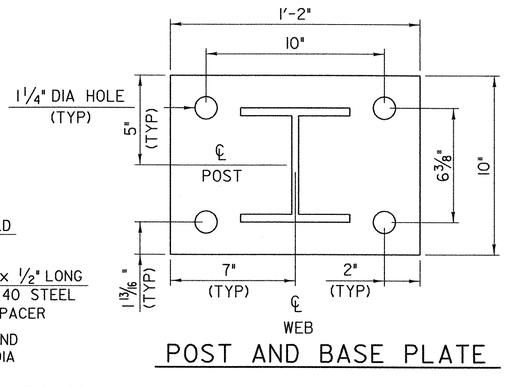
BASE WELD DETAIL



5/8" DIA TAPPED HOLE IN SPLICE TUBE AND 1 1/8" x 'C' SLOT IN RAIL TUBE FOR 5/8" DIA BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION

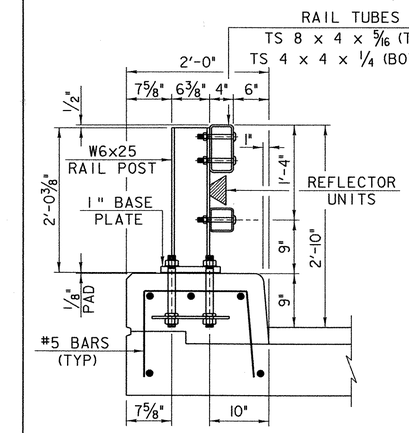
FOR DETAILS NOT SHOWN, SEE "RAIL TUBE SPLICE SECTION."



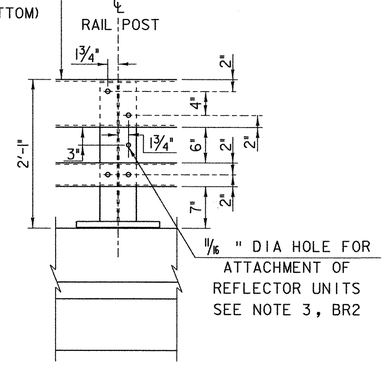
POST AND BASE PLATE

SPLICE TABLE					
T	A	B	C	L	X
N/A	4"	2"	--	20"	3/4"
EXPANSION JOINT TABLE					
<4"	4"	2"	2 1/2"	20"	2 1/2"
>4" <6 1/2"	5 1/2"	2 3/8"	3 1/2"	23 3/4"	4"
>6 1/2" <9"	6 1/2"	3 3/8"	9"*	27 3/4"	5"
>9" <13"	8 1/2"	4 3/8"	11"*	33 3/4"	7"

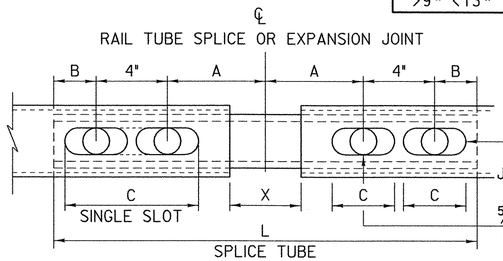
T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 6.
* = SINGLE SLOT



TYPICAL SECTION

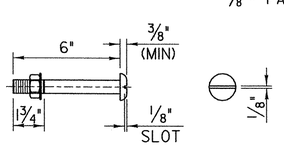


ELEVATION



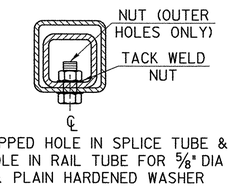
RAIL TUBE SPLICE AND RAIL EXPANSION JOINT DETAIL

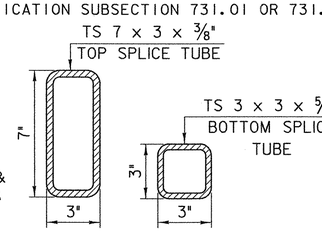
(BOTTOM VIEW)



3/4 " DIA M164 (TYPE I) ROUND HEAD BOLT

(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.





RAIL TUBE SPLICE SECTION

NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525, "RAILINGS OF THE STANDARD SPECIFICATION FOR CONSTRUCTION."
2. TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION" EXCEPT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING IN THIS STANDARD.
3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.
4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.
5. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
6. RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
7. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.
8. RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
9. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
10. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
11. IF THERE IS A CONFLICT BETWEEN THESE STANDARD DETAILS AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.
12. ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.
13. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.
14. RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A-370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN.

MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....ASTM A709A709M, GRADE 50
ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GRADE 36
ANCHOR STUDS.....ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164, TYPE 1

NUTS FOR AASHTO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

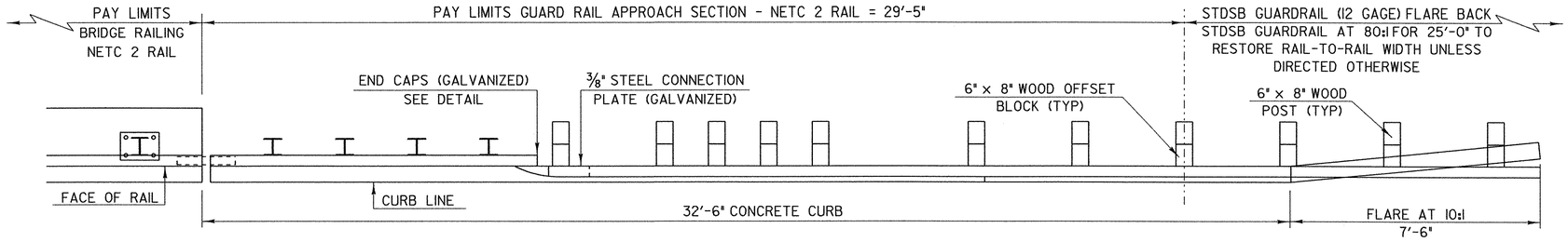
BRIDGE RAILING - NETC 2 RAIL

VERMONT AGENCY OF TRANSPORTATION

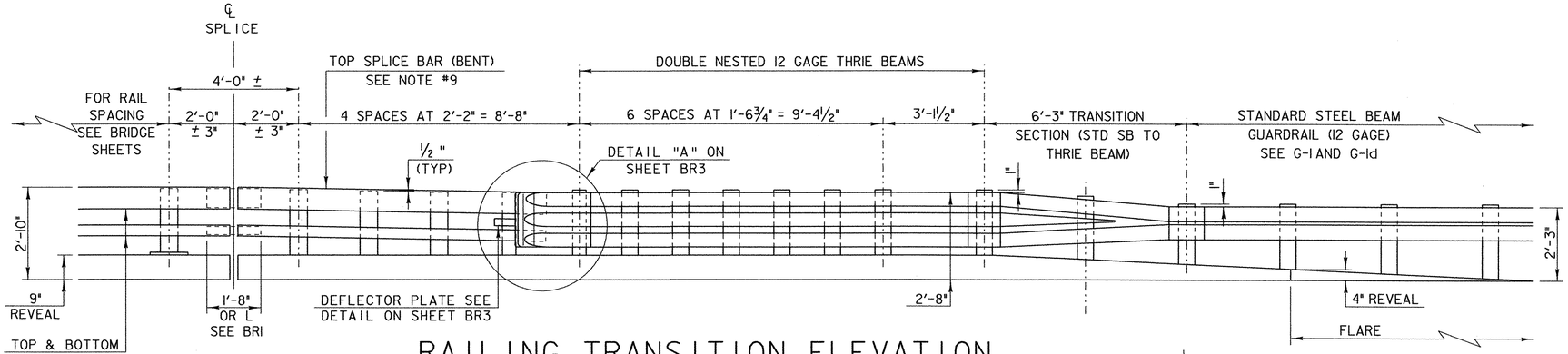
DETAIL BR 1

HARTLAND IM 091-1(36)
I-91 BRIDGE 38

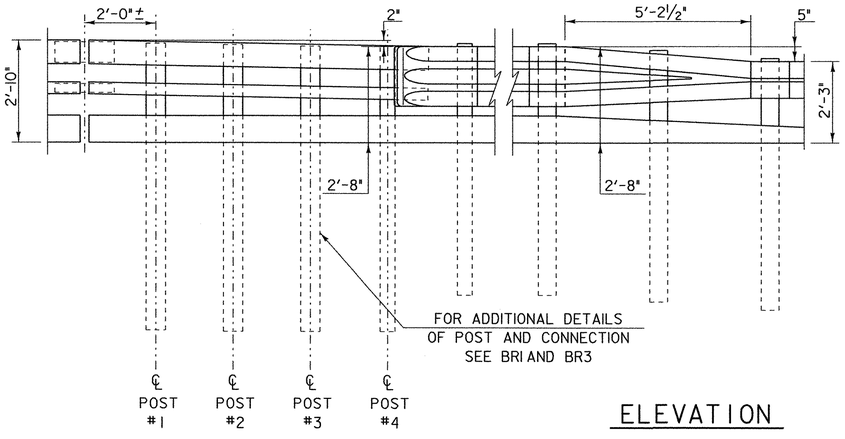
PROJECT SHEET 37 of 85



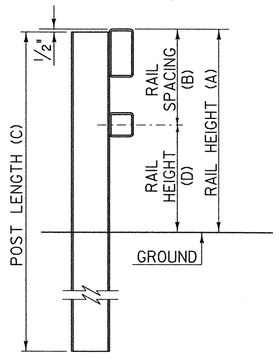
RAILING TRANSITION PLAN



RAILING TRANSITION ELEVATION

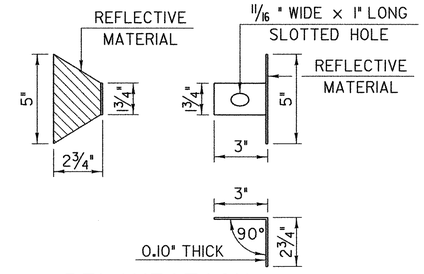


ELEVATION



TYPICAL SECTION

POST NUMBER	RAIL HEIGHT (A)	RAIL SPACING (B)	POST LENGTH (C)	RAIL HEIGHT (D)
1	2'-9 1/2"	1'-3 3/4"	8'-0"	1'-5 3/4"
2	2'-9"	1'-3 1/2"	8'-0"	1'-5 1/2"
3	2'-8 1/2"	1'-3 3/16"	8'-0"	1'-5 5/16"
4	2'-8"	1'-2 7/8"	8'-0"	1'-5 1/8"



DELINEATION DEVICE DETAILS

NOTES

1. REFER TO SHEET BR1 FOR ADDITIONAL DETAILS, NOTES AND MATERIAL SPECIFICATIONS.
2. PAYMENT FOR GUARD RAIL APPROACH SECTION - NETC 2 RAIL SHALL INCLUDE THE TERMINAL CONNECTOR, THE CONNECTION PLATE, THE DEFLECTOR PLATE, RAIL, POSTS, BLOCKS AND ATTACHMENT HARDWARE.
3. THE REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 30' (OR CLOSEST POST) WITH A 5/8" DIAMETER BOLT. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.
4. REFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVER'S LEFT AND SILVER ON THEIR RIGHT.
5. ON BRIDGES WITH A SIDWALK, DELINEATORS ARE NOT TO BE INSTALLED ON THE SIDEWALK SIDE OF THE BRIDGE (I.E. DELINEATORS INSTALLED ONLY ON THE CURB SIDE AND ON THE APPROACH ON THE CURB SIDE). PAYMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS.
6. ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.
7. ALL BRIDGE APPROACH RAIL MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.
8. CARRIAGE BOLTS SHALL BE AASHTO M164 AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED).
9. WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B-U2).
10. THE CONCRETE CURB WILL BE PAID FOR AS ITEM 616.28, "CAST-IN-PLACE CONCRETE CURB, TYPE B."

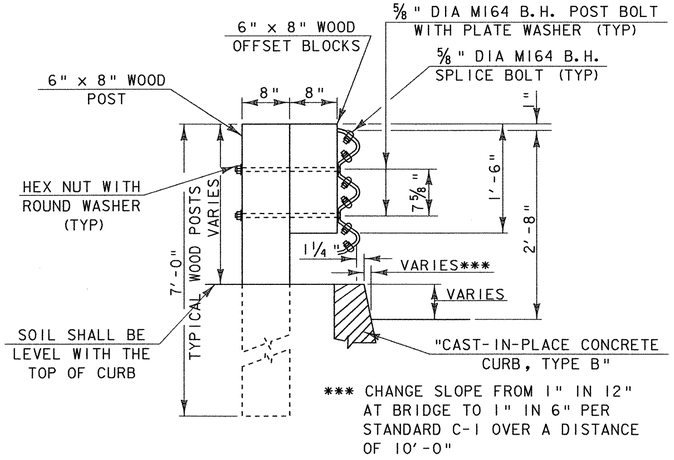
BRIDGE RAILING - NETC 2 RAIL - THRIE BEAM APPROACH RAIL

VERMONT AGENCY OF TRANSPORTATION

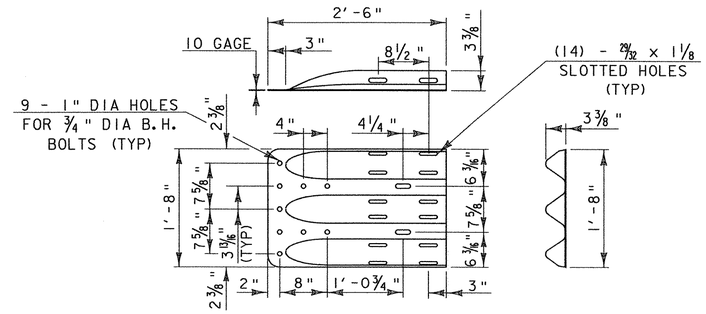
DETAIL BR 2

HARTLAND IM 091-1(36)
I-91 BRIDGE 38

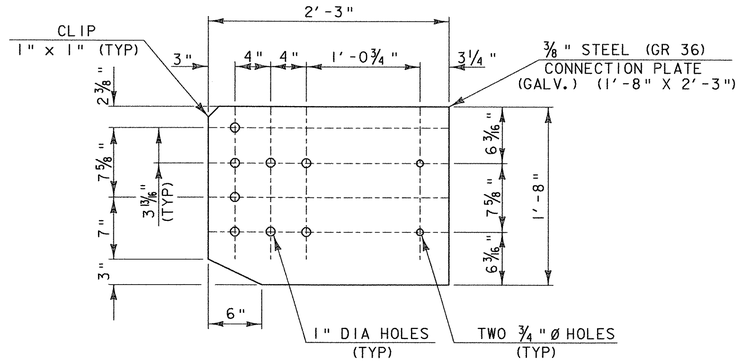
PROJECT SHEET 38 of 85



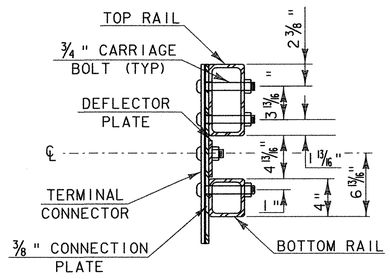
WOOD POST-RAIL ASSEMBLY



THRIE-BEAM TERMINAL CONNECTOR

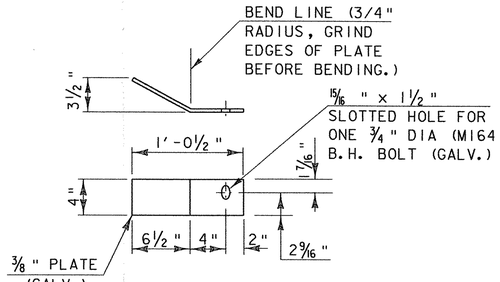


CONNECTION PLATE

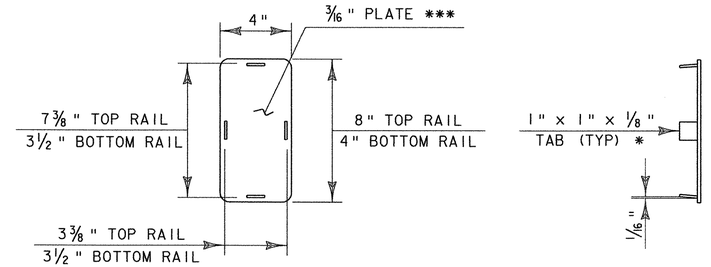


C

SECTION C-C (CONNECTION PLATE)

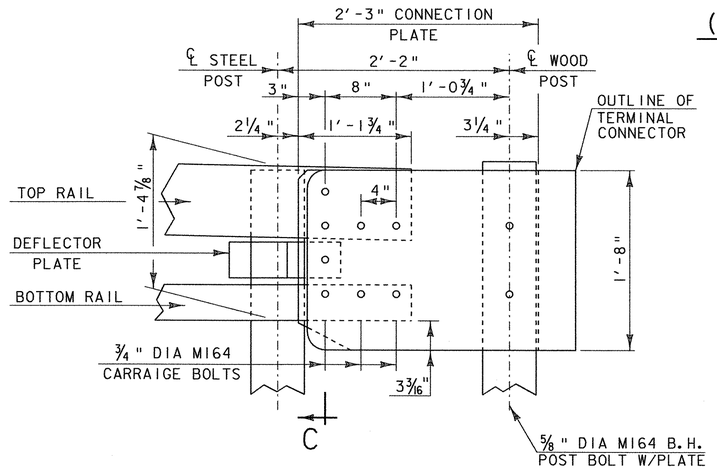


DEFLECTOR PLATE DETAIL

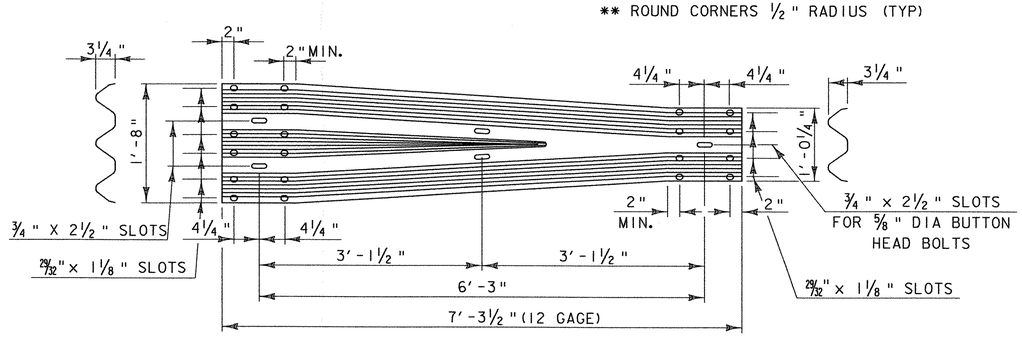


* WELD TABS TO END CAP PLATE IN TAPERED POSITION SO CAP CAN BE JAMMED INTO END OF RAIL TUBE.
** ROUND CORNERS 1/2" RADIUS (TYP)

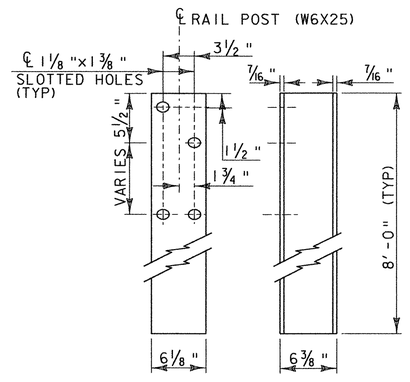
END CAP DETAIL



DETAIL A



THRIE-BEAM TO STD SB TRANSITION SECTION



RAIL POST

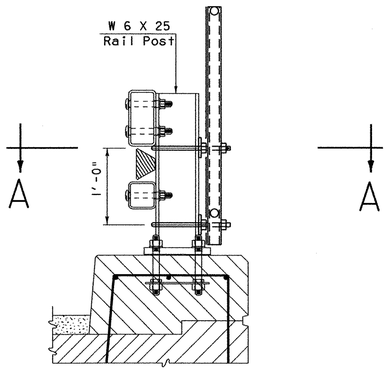
BRIDGE RAILING - NETC 2 RAIL - THRIE BEAM APPROACH RAIL

VERMONT AGENCY OF TRANSPORTATION

DETAIL BR 3

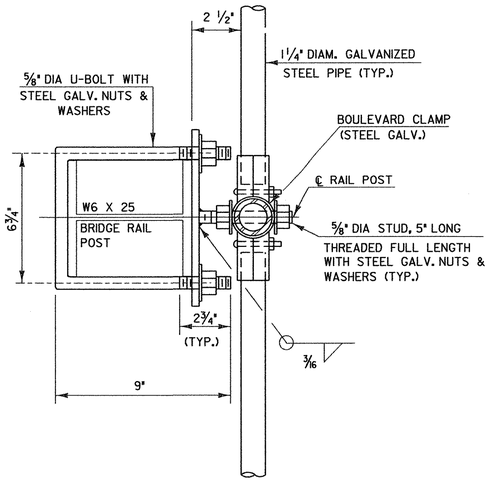
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

PROJECT SHEET 38A of 85

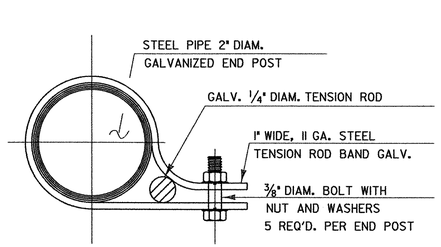


TYPICAL SECTION

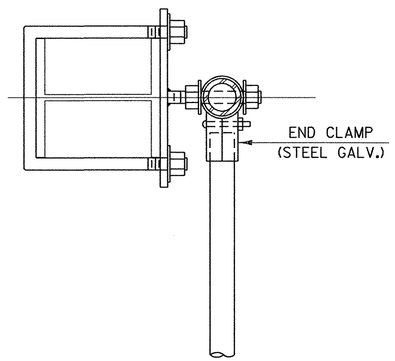
NOTE: FOR DIMENSIONS SEE SHEETS BR1 & BR2.



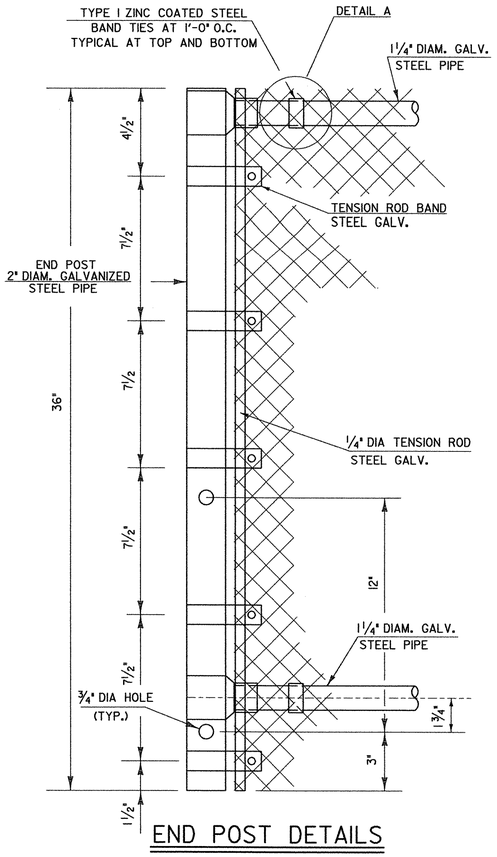
SECTION A-A



TENSION ROD BAND



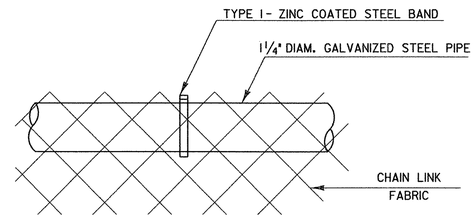
PLAN VIEW AT END POST



END POST DETAILS

NOTES

1. THREADS OF STUDS AND U-BOLTS TO BE 5/8-11 UNC.
2. ALL CONNECTION PLATES TO BE GALVANIZED AFTER FABRICATION.
3. 1 ¼" PIPE LENGTH SHALL BE FIELD CUT TO FIT POST SPACING.
4. CHAIN LINK FABRIC TO BE KNUCKLED TOP AND BOTTOM.
5. ALL BOLTS, THREADED STUDS AND WASHERS SHALL CONFORM TO THE SPECIFICATIONS FOR AASHTO M-164, TYPE 1. NUTS SHALL CONFORM TO AASHTO M-291.
6. ALL STEEL PLATES SHALL CONFORM TO THE SPECIFICATION FOR AASHTO M270 GRADE 36.
7. ALL GALVANIZING SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-181 WITH HARDWARE AND FITTINGS CONFORMING TO THE REQUIREMENTS OF AASHTO M-111 OR AASHTO M-232 WHICHEVER IS APPLICABLE. ALL BOLTS, NUTS AND WASHERS SHALL BE EITHER HOT-DIP GALVANIZED IN ACCORDANCE WITH THE ABOVE AASHTO REQUIREMENTS OR MECHANICALLY GALVANIZED USING A MECHANICALLY DEPOSITED PROCESS CONFORMING TO THE REQUIREMENTS OF AASHTO M-298, CLASS 110.
8. GALVANIZED CHAIN-LINK FABRIC SHALL BE TYPE 1 (ZINC) CLASS D AS SPECIFIED IN AASHTO M-181.
9. SNOW BARRIER SHALL BEGIN AT THE BRIDGE RAIL POST WHICH WILL PROVIDE A MINIMUM DISTANCE OF 20' (AS SHOWN) OR AS DIRECTED BY THE ENGINEER.
10. ALL REFERENCES TO THE DIAMETERS OF GALVANIZED STEEL PIPE SHALL REFER TO THE OUTSIDE DIAMETER (O.D.).
11. ALL POSTS, RAILS AND HARDWARE SHALL BE ZINC COATED AND CONFORM TO THE REQUIREMENTS OF AASHTO M-181, GRADE 1 OR GRADE 2.



DETAIL A

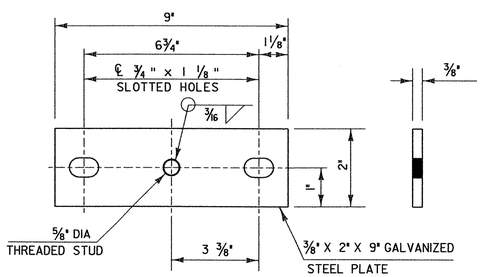
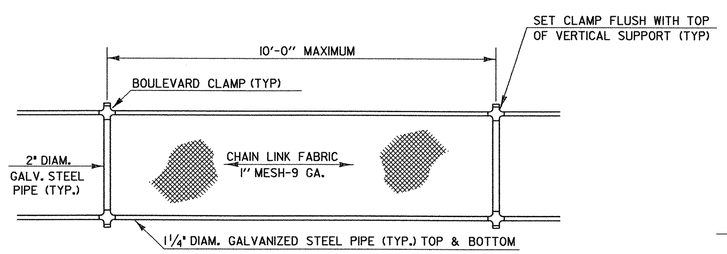
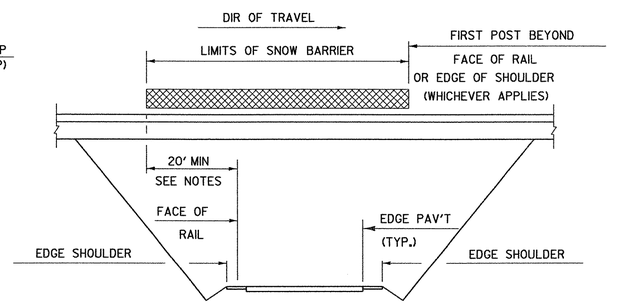


PLATE DETAILS



ELEVATION SNOW BARRIER



SCHEMATIC SNOW BARRIER LIMITS

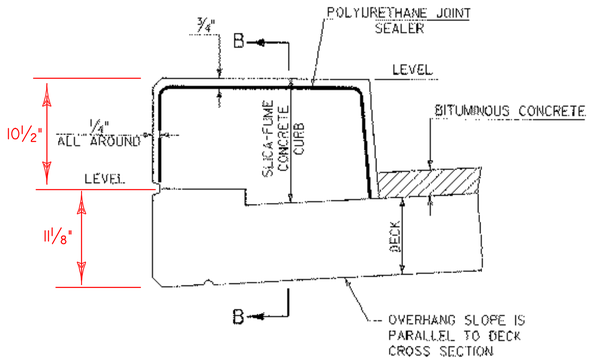
SNOW FENCE FOR BRIDGE RAILING - N.E.T.C. 2 RAIL

VERMONT AGENCY OF TRANSPORTATION

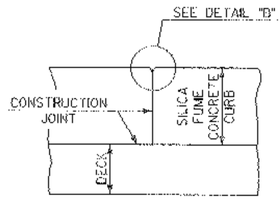
DETAIL BR 4

HARTLAND IM 091-1(36)
I-91 BRIDGE 38

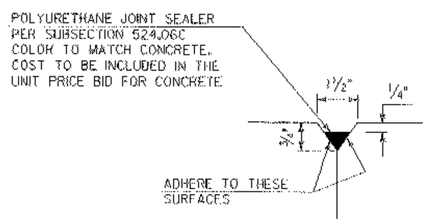
PROJECT SHEET 38B of 85



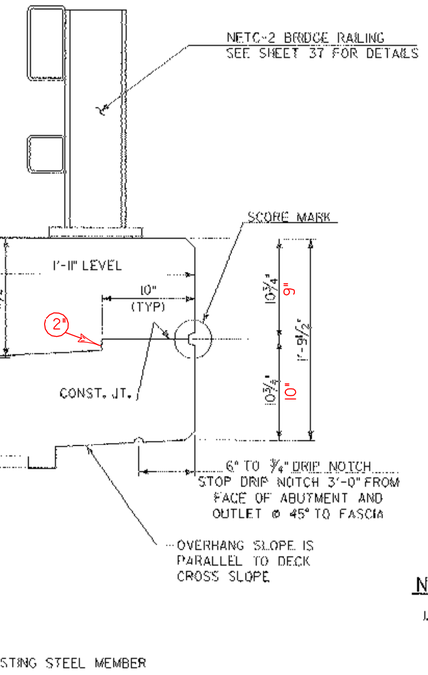
TYPICAL SECTION THROUGH
CONCRETE CURB CONSTRUCTION JOINT
NTS



SECTION B - B
NTS



DETAIL "B"
NTS



TYPICAL CURB SECTION
SCALE: 1 1/2" = 1'-0"

SCALE 1 1/2" = 1'-0
1 9 6 3 0 1

SCALE 3" = 1'-0
1 9 6 3 0 1

NOTES:

1. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 15'-0" CENTER TO CENTER AND SHALL BE 1'-6" MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS EXCEPT AT PIERS.
3. POLYURETHANE MEMBRANE AND BLAST CLEANING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SHEET MEMBRANE TORCH APPLIED

STATE OF VERMONT
AGENCY OF TRANSPORTATION

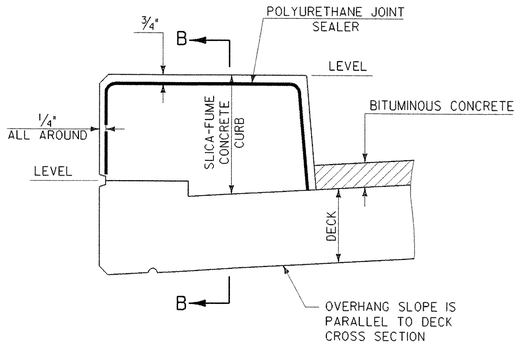
Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.

CURB & CONSTRUCTION JOINT DETAILS

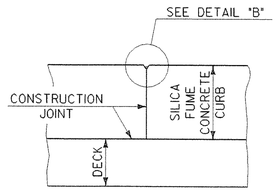
Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272cf.dgn	
Bridge Sheet No.	Sheet 39 of 85

STONE & WEBSTER, INC.

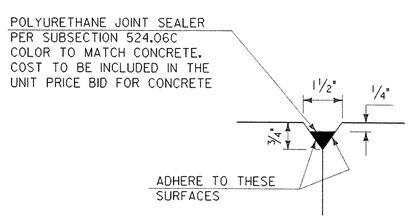
10-DEC-2002
c:\Structures\working\za272cf.dgn



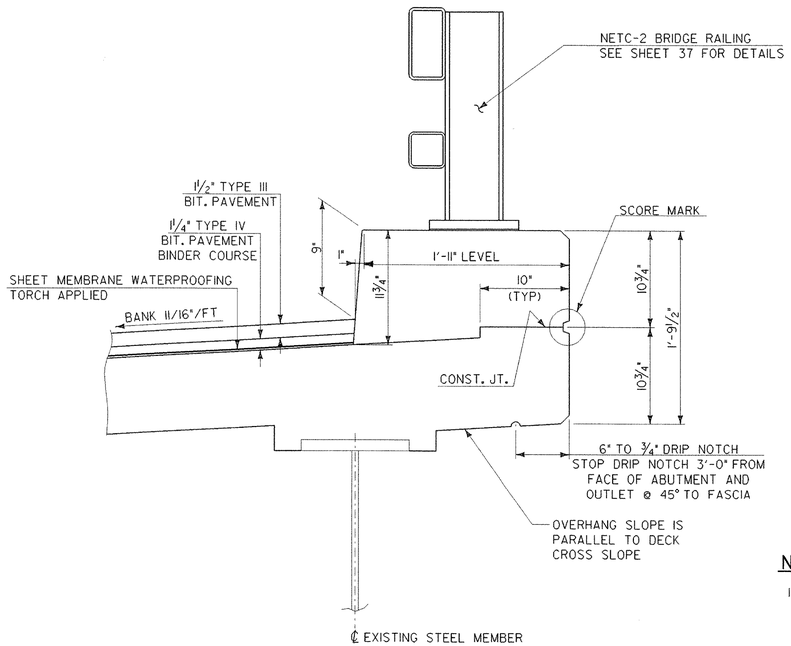
TYPICAL SECTION THROUGH
CONCRETE CURB CONSTRUCTION JOINT
NTS



SECTION B - B
NTS



DETAIL "B"
NTS



TYPICAL CURB SECTION
SCALE: 1 1/2" = 1'-0"

SCALE 1 1/2" = 1'-0
1 9 6 3 0 1

SCALE 3" = 1'-0
1 9 6 3 0 1

NOTES:

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.

CURB & CONSTRUCTION JOINT DETAILS

Designed By E. JOHNSTON	Drawn By N. HERRERA
Checked By E. JOHNSTON Date DEC. 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 200
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272cj.dgn	
Bridge Sheet No.	Sheet 39 of 85

STONE & WEBSTER, INC.

10-DEC-2002

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

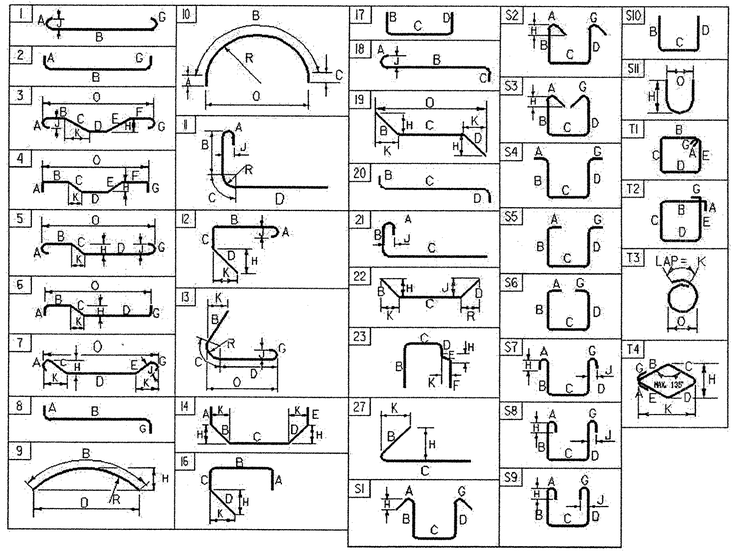
REINFORCING STEEL SCHEDULE

	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
SUPERSTRUCTURE																	
SPAN ONE																	
▲	153	5	12'- 9"	ES503	STR												
▲	153	5	19'- 3"	ES504	STR												
▲	153	5	25'- 9"	ES505	STR												
▲	153	5	10'- 9"	ES506	STR												
	10	5	19'- 3"	ES517	STR												
	112	5	54'- 0"	ES521	STR												
	109	5	5'- 3"	ES507	1	0'- 7"	4'- 8"										
	109	5	5'- 10"	ES508	1	0'- 7"	5'- 3"										
	4	5	3'- 2"	ES510	19		1'- 0"	2'- 2"					0'- 6"				
✳	34	5	10'- 10"	ES511	16	1'- 3"	2'- 6"	6'- 1"	1'- 0"								
	5	5	5'- 0"	ES512	19		2'- 2"	2'- 10"					1'- 6"				
	32	5	2'- 8"	ES513	16	---	---	1'- 2"	1'- 6"								
	5	5	5'- 7"	ES514	19		2'- 2"	3'- 5"					1'- 8"				
	24	5	10'- 5"	ES515	S5	1'- 6"	3'- 3"	0'- 8"	3'- 6"			1'- 6"					
	3	5	11'- 5"	ES516	S5	1'- 6"	3'- 3"	1'- 8"	3'- 6"			1'- 6"					
	31	5	5'- 3"	ES519	S5	1'- 6"	0'- 10"	1'- 2"	0'- 3"			1'- 6"					
	3	5	9'- 1"	ES520	S5	1'- 6"	2'- 7"	0'- 8"	2'- 10"			1'- 6"					
	210	5	6'- 1"	ES523	S5	1'- 0"	1'- 4"	1'- 5"	1'- 4"			1'- 0"					
SPAN TWO																	
▲	159	5	12'- 9"	ES503	STR												
▲	159	5	19'- 3"	ES504	STR												
▲	159	5	25'- 9"	ES505	STR												
▲	159	5	10'- 9"	ES506	STR												
	10	5	19'- 3"	ES517	STR												
	222	5	47'- 7"	ES525	STR												
✳	35	5	12'- 0"	ES527	STR												
	115	5	5'- 3"	ES507	1	0'- 7"	4'- 8"										
	203	5	5'- 10"	ES508	1	0'- 7"	5'- 3"										
	31	5	5'- 3"	ES519	S5	1'- 6"	0'- 10"	1'- 2"	0'- 3"			1'- 6"					
	318	5	6'- 1"	ES523	S5	1'- 0"	1'- 4"	1'- 5"	1'- 4"			1'- 0"					
SPAN THREE																	
▲	109	5	12'- 9"	ES503	STR												
▲	109	5	19'- 3"	ES504	STR												
▲	109	5	25'- 9"	ES505	STR												
▲	109	5	10'- 9"	ES506	STR												
	112	5	47'- 7"	ES525	STR												
	34	5	13'- 0"	ES529	STR												
	4	5	13'- 0"	ES529	STR												
	109	5	5'- 3"	ES507	1	0'- 7"	4'- 8"										
✳	110	5	5'- 10"	ES508	1	0'- 7"	5'- 3"										
	210	5	6'- 1"	ES523	S5	1'- 0"	1'- 4"	1'- 5"	1'- 4"			1'- 0"					
SPAN FOUR																	
✳ ▲	189	5	12'- 9"	ES503	STR												
▲	188	5	19'- 3"	ES504	STR												
▲	188	5	25'- 9"	ES505	STR												
▲	188	5	10'- 9"	ES506	STR												
	10	5	19'- 3"	ES517	STR												
	222	5	47'- 7"	ES525	STR												
	188	5	5'- 3"	ES507	1	0'- 7"	4'- 8"										
✳	145	5	5'- 10"	ES508	1	0'- 7"	5'- 3"										
	31	5	5'- 3"	ES519	S5	1'- 6"	0'- 10"	1'- 2"	0'- 3"			1'- 6"					
	384	5	6'- 1"	ES523	S5	1'- 0"	1'- 4"	1'- 5"	1'- 4"			1'- 0"					
SPAN FIVE																	
▲	234	5	12'- 9"	ES503	STR												
▲	232	5	19'- 3"	ES504	STR												
▲	234	5	25'- 9"	ES505	STR												
▲	232	5	10'- 9"	ES506	STR												
▲	28	5	19'- 3"	ES509	STR												
	10	5	19'- 3"	ES517	STR												
	321	5	33'- 6"	ES531	STR												
	190	5	5'- 3"	ES507	1	0'- 7"	4'- 8"										
✳	189	5	5'- 10"	ES508	1	0'- 7"	5'- 3"										
	24	5	11'- 0"	ES518	S5	1'- 6"	3'- 5"	0'- 11"	3'- 8"			1'- 6"					
	31	5	5'- 3"	ES519	S5	1'- 6"	0'- 10"	1'- 2"	0'- 3"			1'- 6"					
	2	5	13'- 1"	ES522	S5	1'- 6"	3'- 5"	2'- 3"	3'- 8"			1'- 6"					
	354	5	6'- 1"	ES523	S5	1'- 0"	1'- 4"	1'- 5"	1'- 4"			1'- 0"					
✳	33	5	11'- 1"	ES524	16	1'- 3"	2'- 9"	6'- 1"	1'- 0"								
	32	5	2'- 11"	ES526	16	---	---	1'- 5"	1'- 6"								
	4	5	3'- 2"	ES532	19		1'- 0"	2'- 2"					0'- 6"				
	5	5	3'- 10"	ES533	19		1'- 8"	2'- 2"					1'- 4"				
	5	5	4'- 7"	ES534	19		2'- 2"	2'- 5"					1'- 10"				

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
APPROACH SLAB NUMBER ONE																	
	26	5	48'- 0"	1EAS503	STR												
	16	8	2'- 7"	1EAS801	22			1'- 9"	0'- 10"	---							
✳	44	9	25'- 9"	1EAS901	1	1'- 3"	24'- 6"							0'- 11"			
APPROACH SLAB NUMBER TWO																	
✳	26	5	48'- 0"	2EAS503	STR												
	16	8	2'- 7"	2EAS801	22			1'- 9"	0'- 10"	---							
	44	9	25'- 9"	2EAS901	1	1'- 3"	24'- 6"							0'- 11"			
ABUTMENT ONE																	
SOUTH WINGWALL																	
⑦	7	5	7'- 1"	1W501	STR												
	7	5	4'- 6"	1W505	S10		3'- 0"	1'- 6"	---								
	7	5	4'- 6"	1W506	S10		3'- 0"	1'- 6"	---								
NORTH WINGWALL																	
	5	5	11'- 1"	1W503	STR												
	12	5	4'- 6"	1W505	S10		3'- 0"	1'- 6"	---								
	12	5	4'- 6"	1W506	S10		3'- 0"	1'- 6"	---								
ABUTMENT TWO																	
SOUTH WINGWALL																	
	5	5	34'- 6"	2W502	STR												
	35	5	4'- 6"	1W505	S10		3'- 0"	1'- 6"	---								
	35	5	4'- 6"	1W506	S10		3'- 0"	1'- 6"	---								
NORTH WINGWALL																	
⑦	7	5	19'- 0"	2W504	STR												
	19	5	4'- 6"	1W505	S10		3'- 0"	1'- 6"	---								
	19	5	4'- 6"	1W506	S10		3'- 0"	1'- 6"	---								
PIER ONE																	
▲	30	5	5'- 4"	1P501	17		1'- 10"	1'- 8"	1'- 10"								
PIER THREE																	
▲	60	5	5'- 4"	3P501	17		1'- 10"	1'- 8"	1'- 10"								
PIER FOUR																	
▲	42	5	5'- 4"	4P501	17		1'- 10"	1'- 8"	1'- 10"								

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. ⑦ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



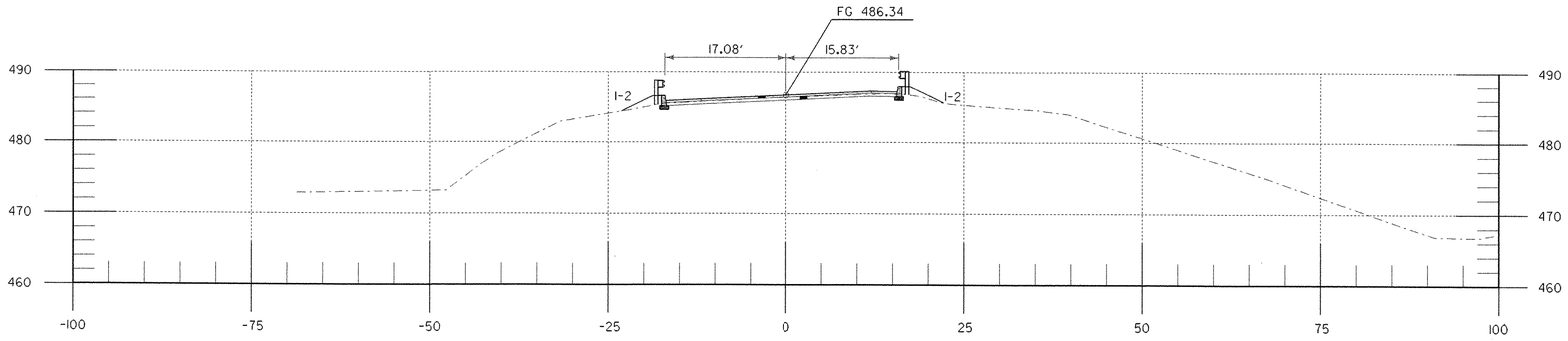
ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES^2	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

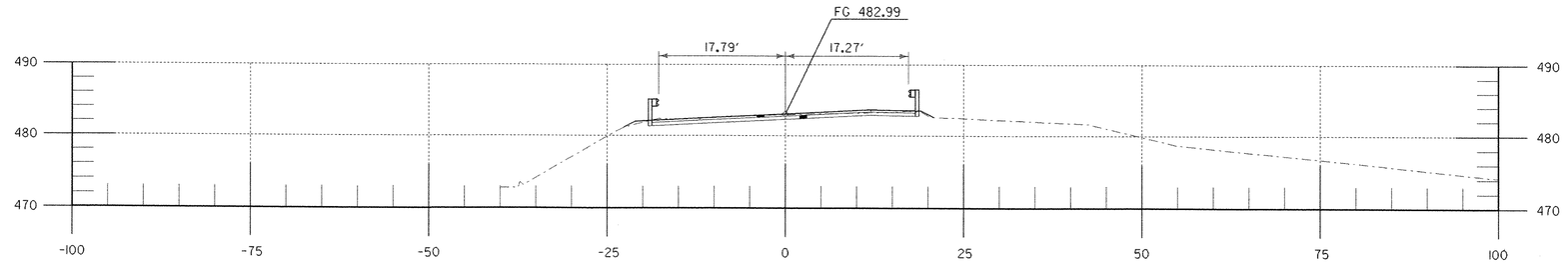
PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1 (36)**

FILE NAME: **za272rs.xls**
PROJECT LEADER: **E JOHNSTON**
DESIGNED BY: **S YONGHO**
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: **12/10/2002**
DRAWN BY: **N HERRERA**
CHECKED BY: **E JOHNSTON**
SHEET **40** OF **85**



422+55



422+05

SCALE 1" = 10'-0
10 0 10

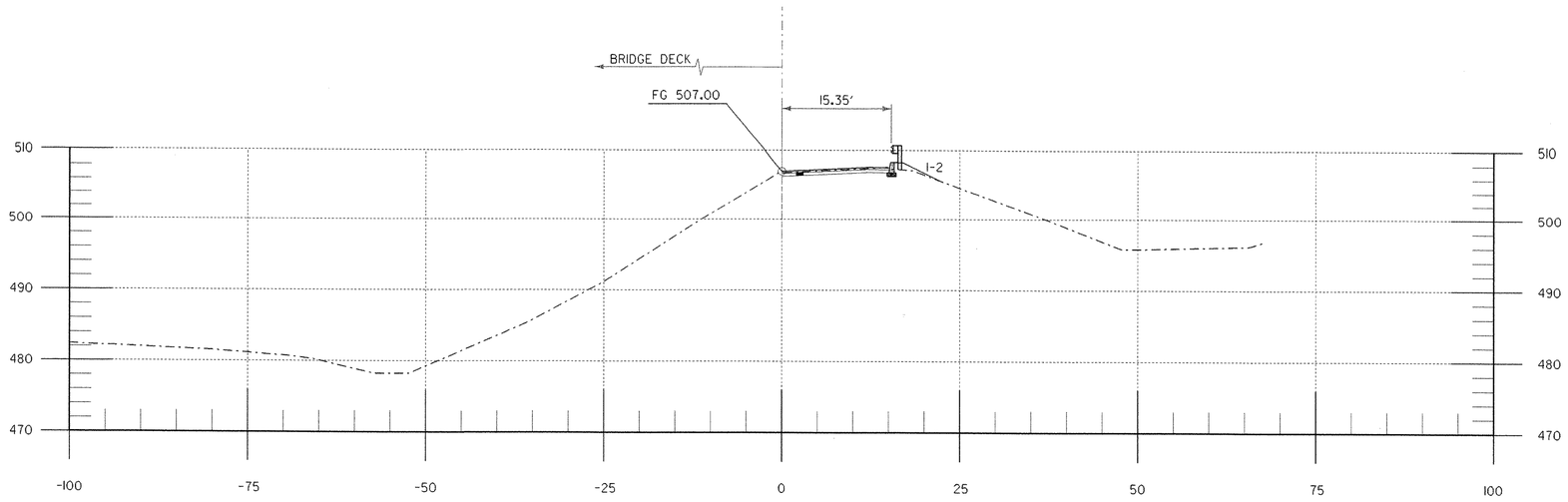
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
US 5 CROSS SECTIONS	
STA 422+05 TO 422+55	
Designed By J. BARRACK	Drawn By N. HERRERA
Checked By J. BARRACK Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272xsl.dgn	
Bridge Sheet No.	Sheet 42 of 85

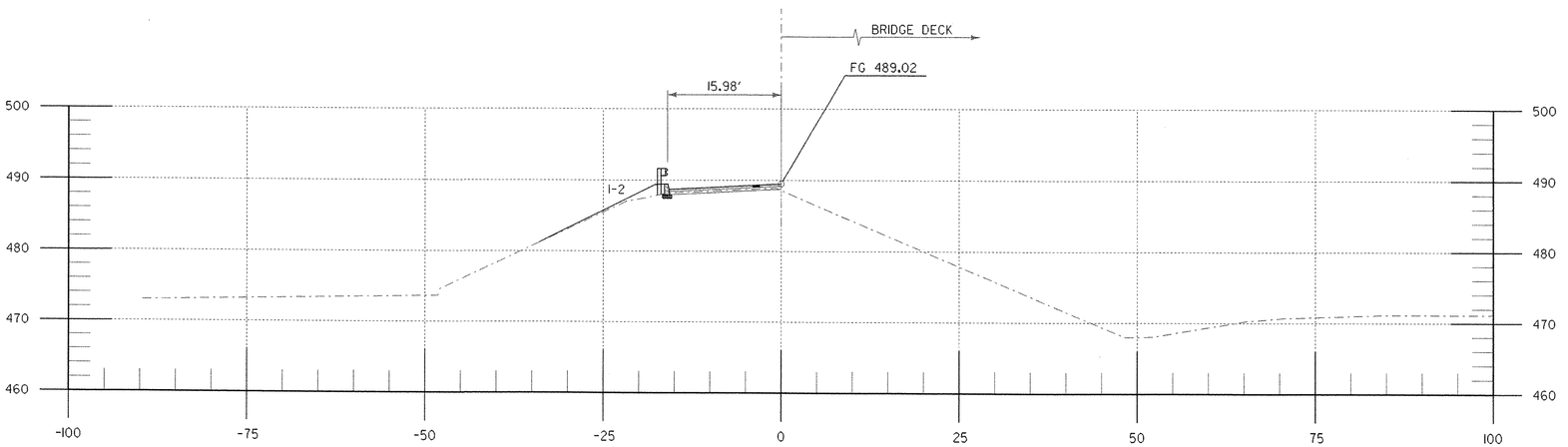
STONE & WEBSTER, INC.

10-DEC-2002

v:\Civil\working\za272xsl.dgn



426+70



422+95

SCALE 1" = 10'-0
10 0 10

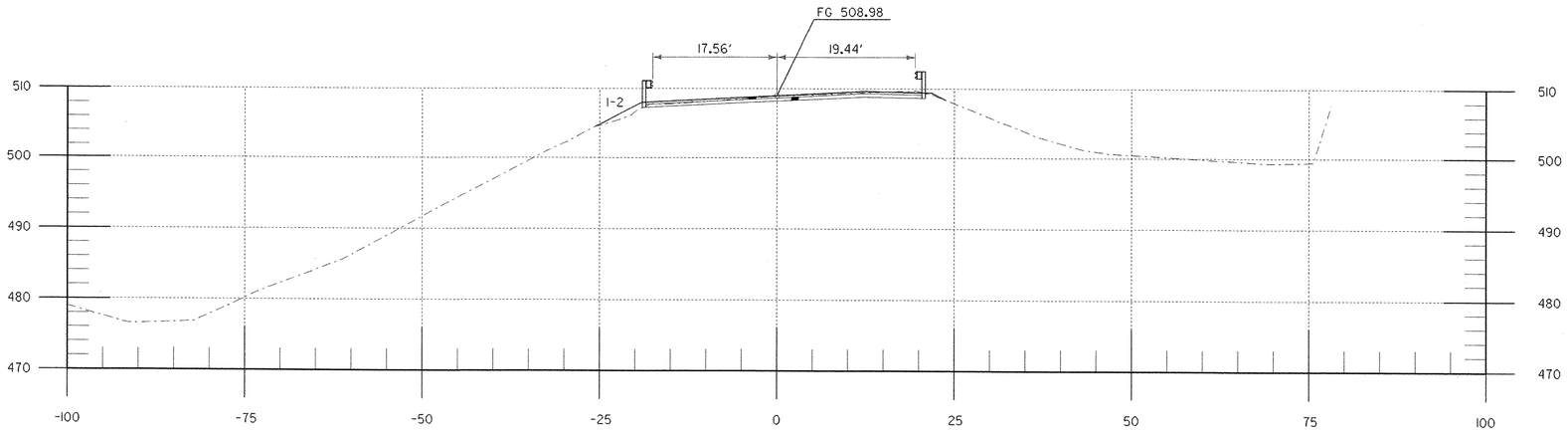
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
US 5 CROSS SECTIONS	
STA 422+95 TO 426+70	
Designed By J. BARRACK	Drawn By N. HERRERA
Checked By J. BARRACK Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272xs2.dgn	
Bridge Sheet No.	Sheet 43 of 85

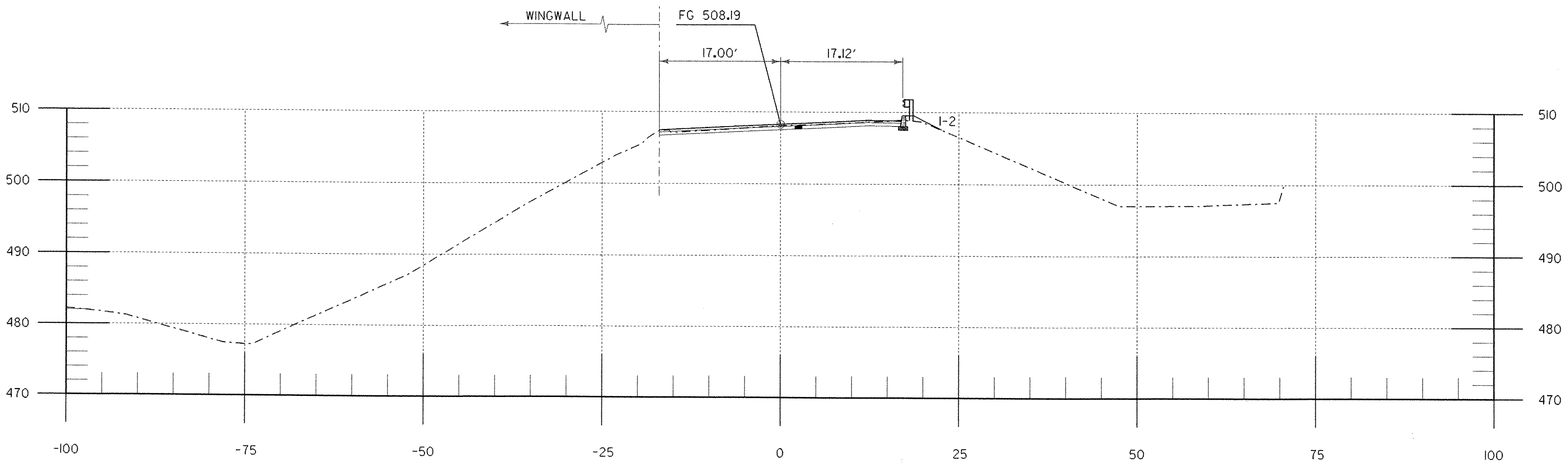
STONE & WEBSTER, INC.

10-DEC-2002

v:\Civil\working\za272xs2.dgn



427+60



427+20

SCALE 1" = 10'-0
10 0 10

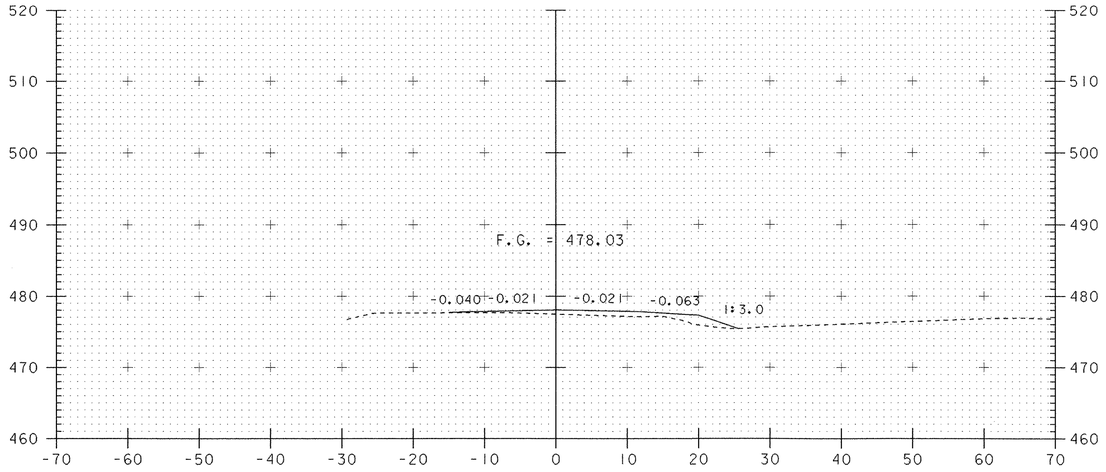
10-DEC-2002

v:\Civil\working\za272xs3.dgn

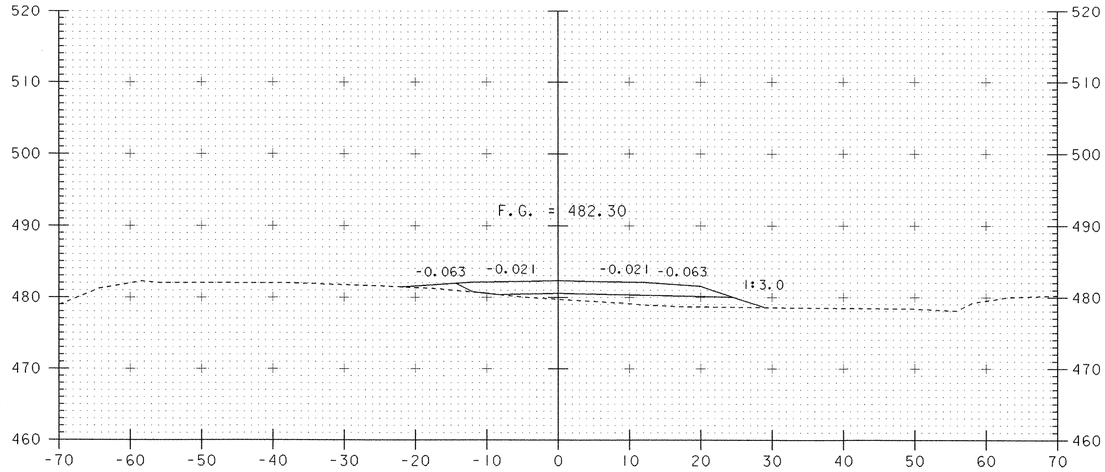
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
	Log Sta.
Highway No. I-91	Surv. Sta.
US 5 CROSS SECTIONS	
STA 427+20 TO 427+60	
Designed By J. BARRACK	Drawn By N. HERRERA
Checked By J. BARRACK Date DEC 2000	Bridge Design Supervisor E. JOHNSTON Date FEB. 2001
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272xs3.dgn	
Bridge Sheet No.	Sheet 44 of 85

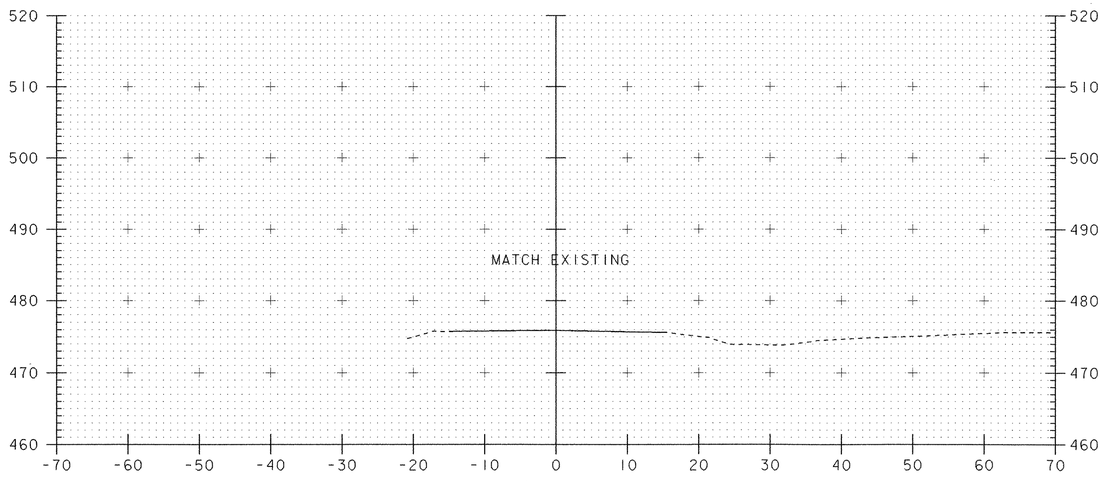
STONE & WEBSTER, INC.



101+25

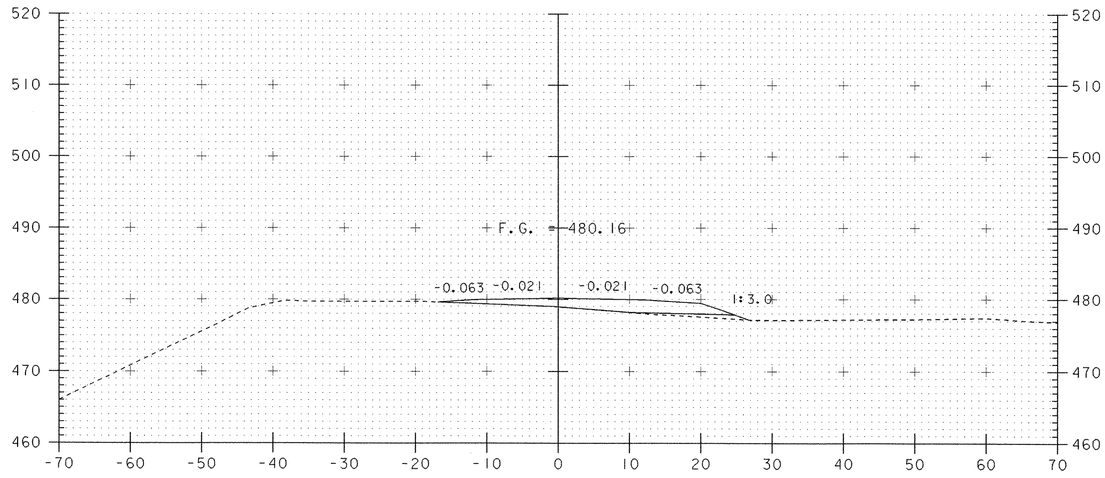


101+75



101+00

BEGIN TEMPORARY DETOUR

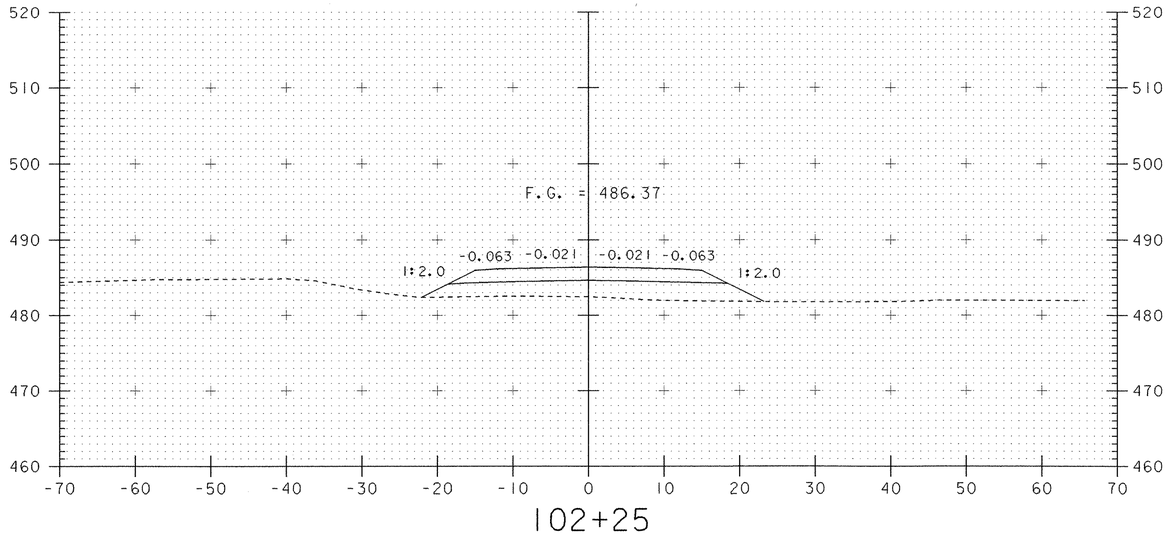


101+50

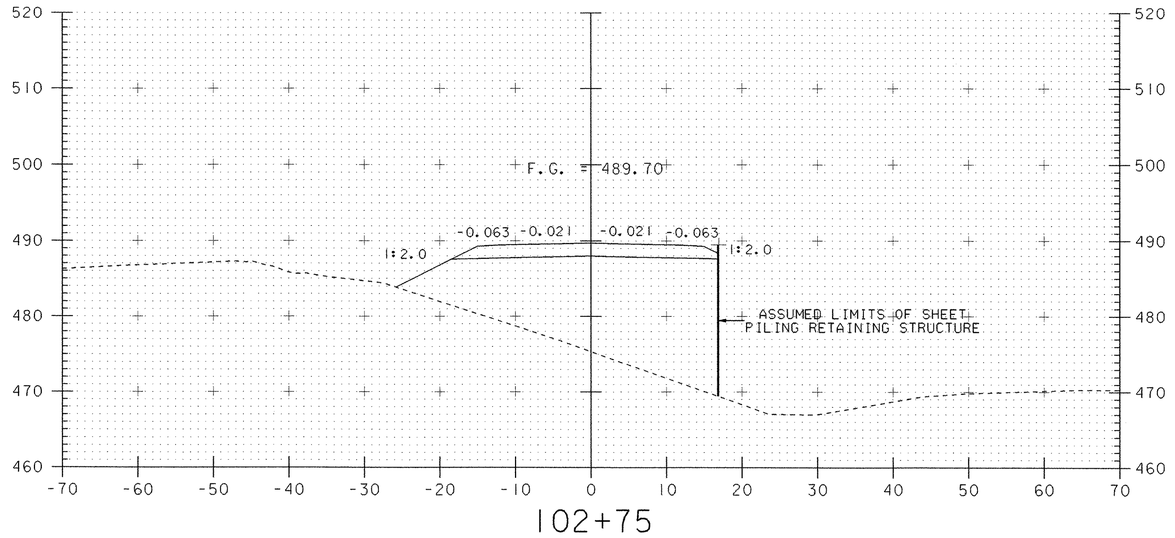
TEMPORARY DETOUR CROSS SECTIONS
STATION 101+00 TO 101+75

SCALE 1" = 10'-0

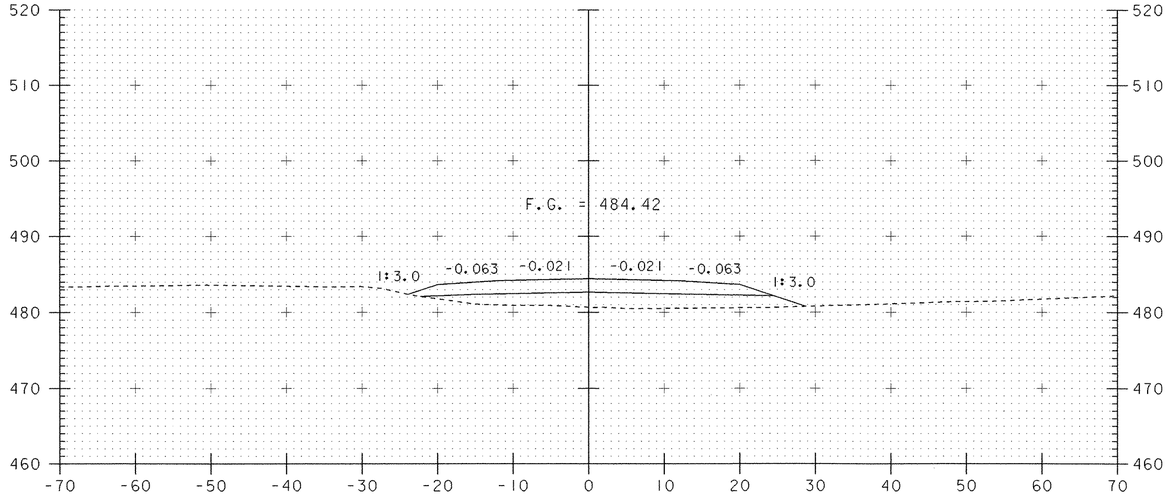
PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)
FILE NAME: str7/99a272/sa272xs.dgn	PLOT DATE: 24-DEC-2002
PROJECT LEADER: S. FARNSWORTH	DRAWN BY: K. UPMAL
DESIGNED BY: FOWLER / UPMAL	CHECKED BY:
sa272txl.i	SHEET 44A OF 85



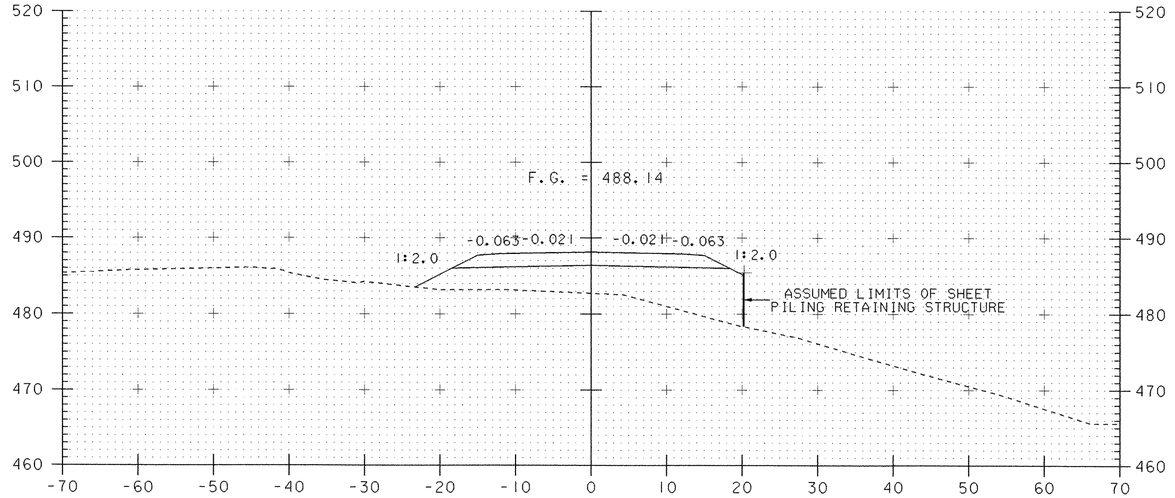
102+25



102+75



102+00



102+50

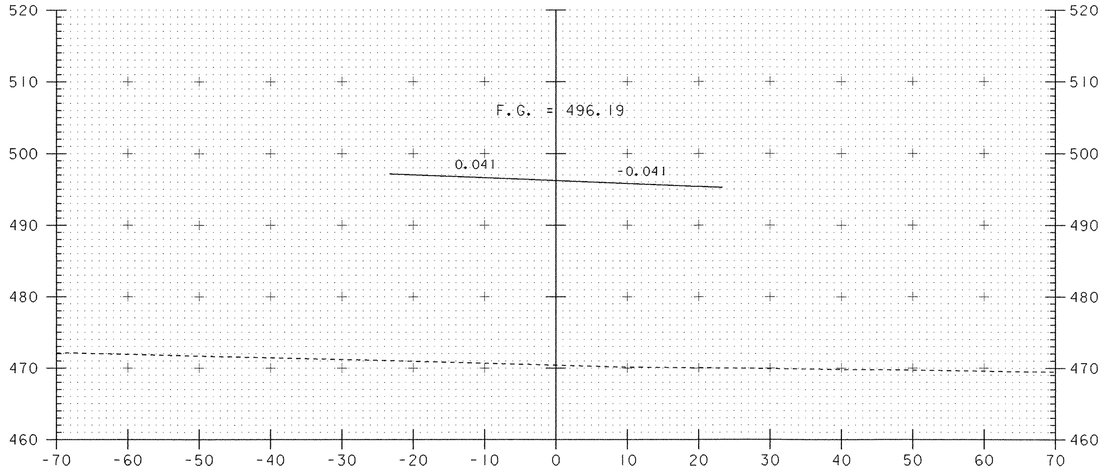
STA 102+42 RT - BEGIN W.W. 1

TEMPORARY DETOUR CROSS SECTIONS
STATION 102+00 TO 102+75

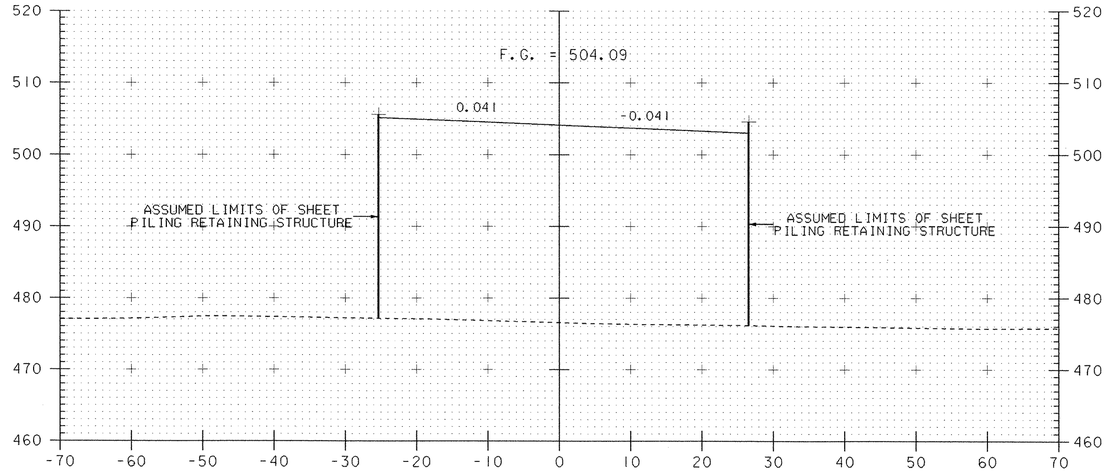
SCALE 1" = 10'-0
10 0 10

PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

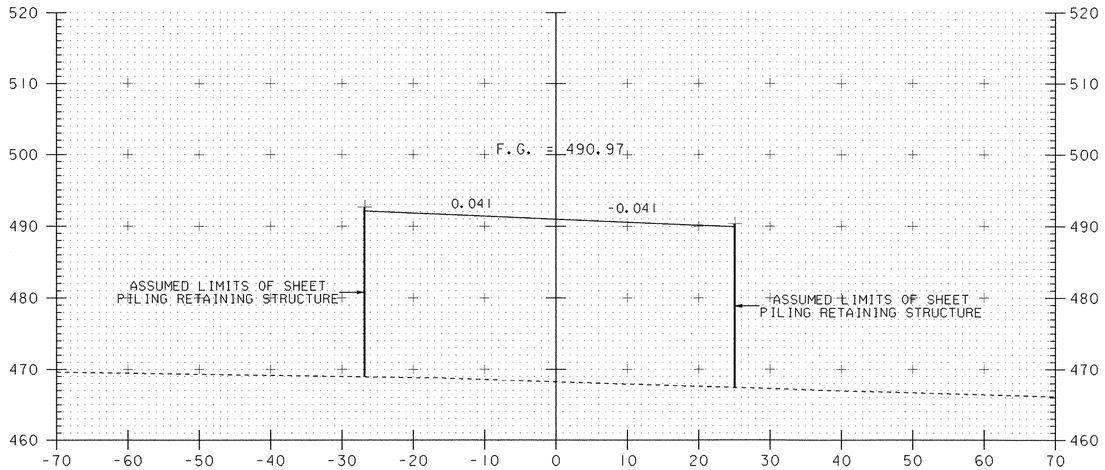
FILE NAME: str7/99a272/sa272xs.dgn		PLOT DATE:	24-DEC-2002
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	FOWLER / UPMAL	CHECKED BY:	
sa272tx2.i		SHEET 44B	OF 85



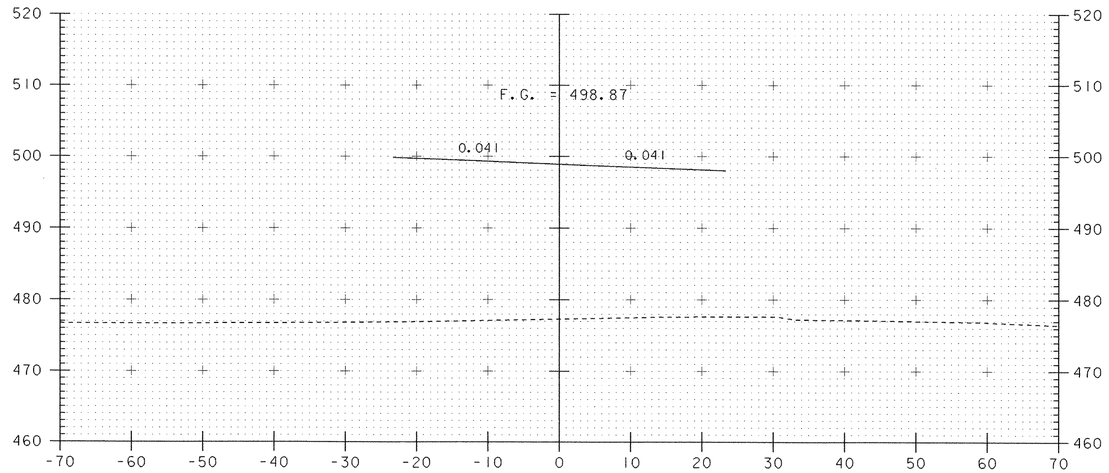
103+95.00
CENTERLINE BEARING - SPAN 1 - ABUTMENT #2
ASKEW 40°-00'-00''



105+42.00
CENTERLINE BEARING - SPAN 2 - ABUTMENT #4
ASKEW 40°-00'-00''



102+98.00
CENTERLINE BEARING - SPAN 1 - ABUTMENT #1
ASKEW 40°-00'-00''
STA 103+14 LT - BEGIN W.W. 2



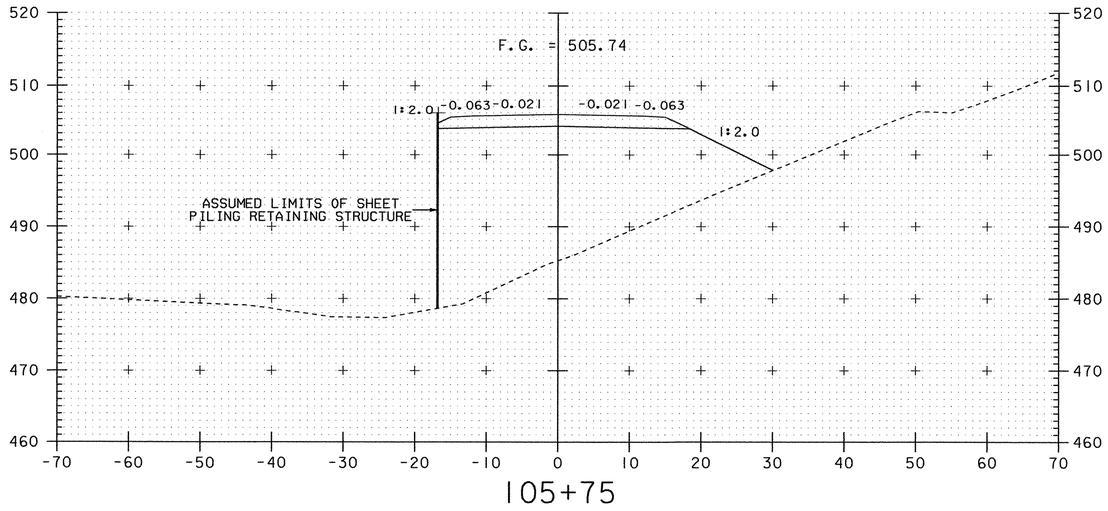
104+45.00
CENTERLINE BEARING - SPAN 2 - ABUTMENT #3
ASKEW 40°-00'-00''

TEMPORARY DETOUR CROSS SECTIONS
STATION 102+98 TO 105+42

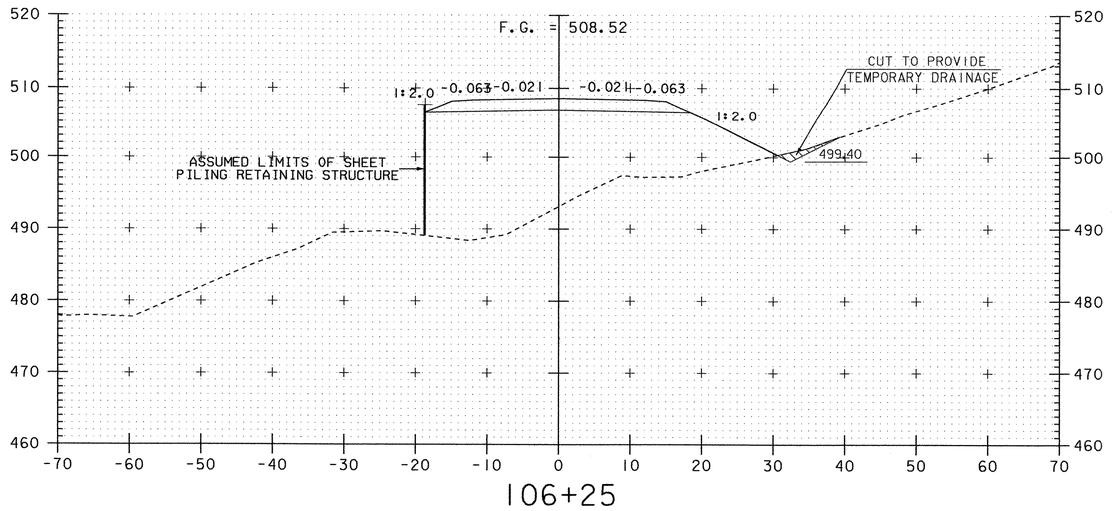
SCALE 1"-10'-0
10 0 10

PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

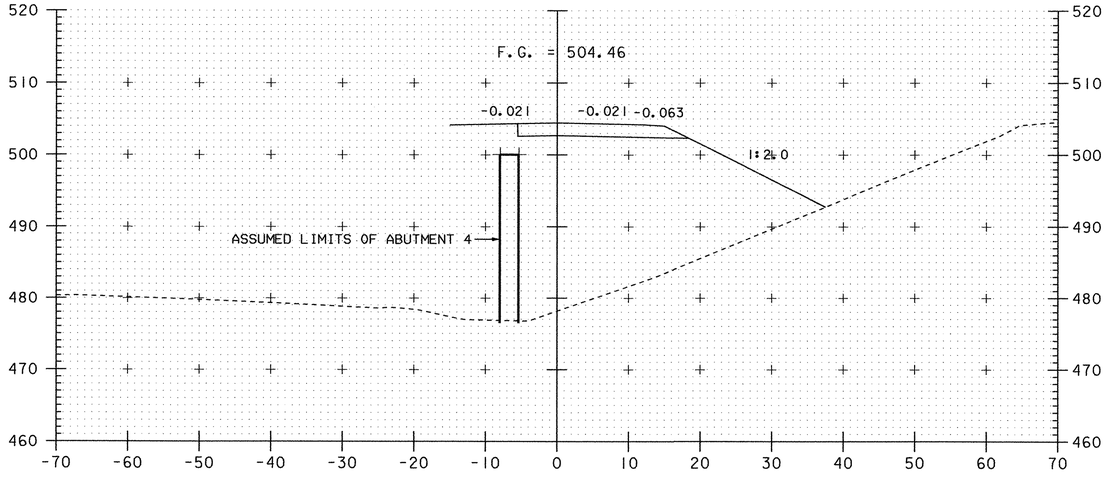
FILE NAME:	str7/99a272/sa272xs.dgn	PLOT DATE:	24-DEC-2002
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	FOWLER / UPMAL	CHECKED BY:	
sa272tx3.1		SHEET	44C OF 85



105+75

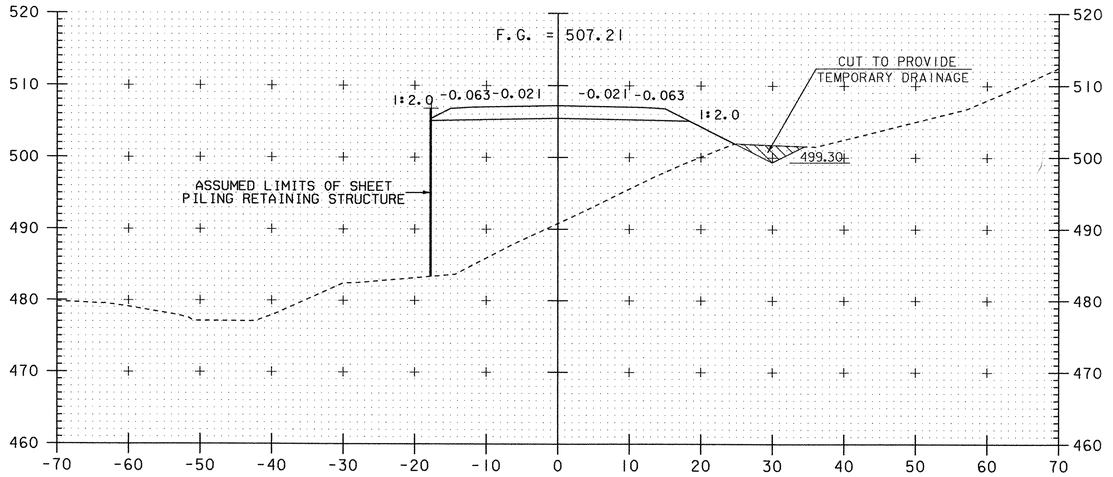


106+25



105+50

STA 105+36 RT - END W. W. 3



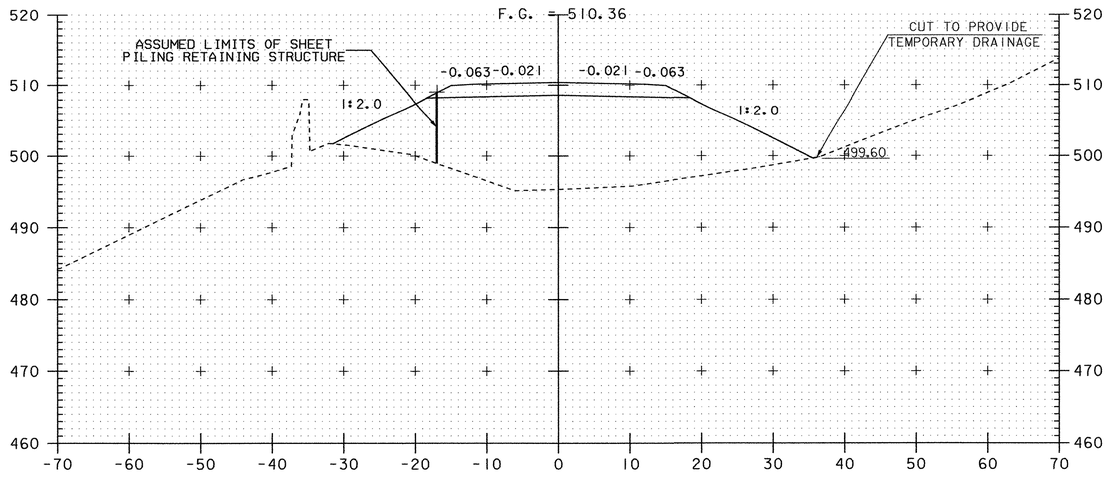
106+00

TEMPORARY DETOUR CROSS SECTIONS
STATION 105+50 TO 106+25

SCALE 1" = 10'-0
10 0 10

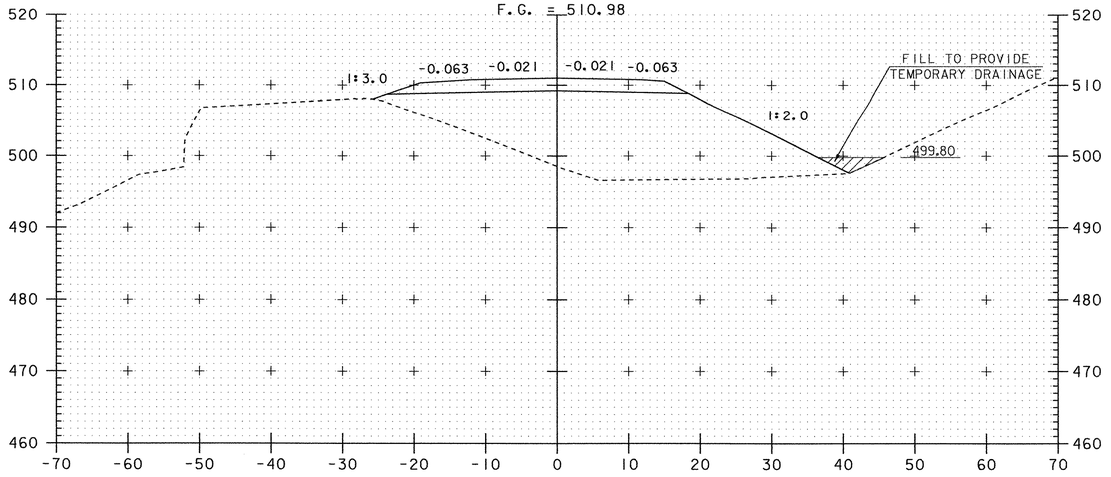
PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

FILE NAME:	str7/99a272/sa272xs.dgn	PLOT DATE:	03-FEB-2003
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	FOWLER / UPMAL	CHECKED BY:	
sa272tx4.1		SHEET 44D	OF 85

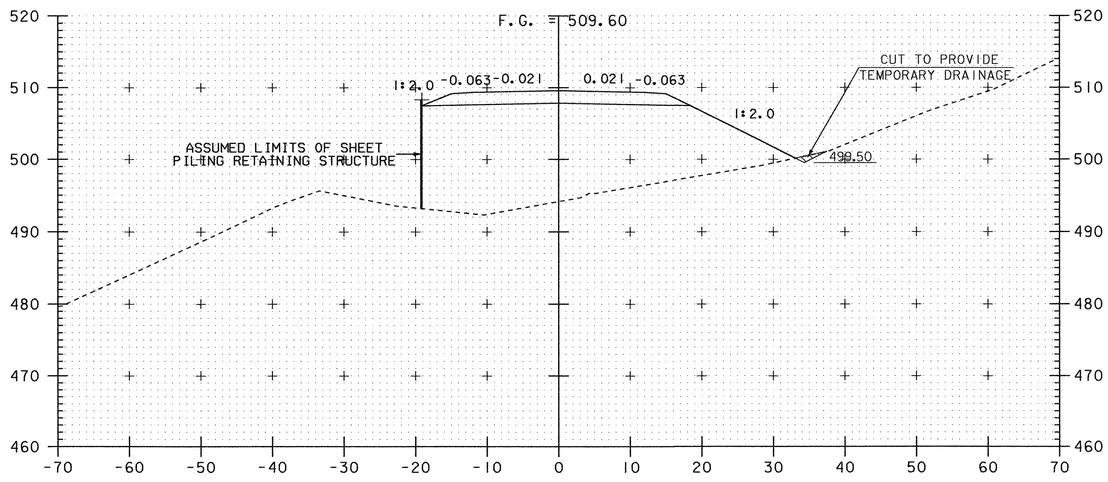


106+75

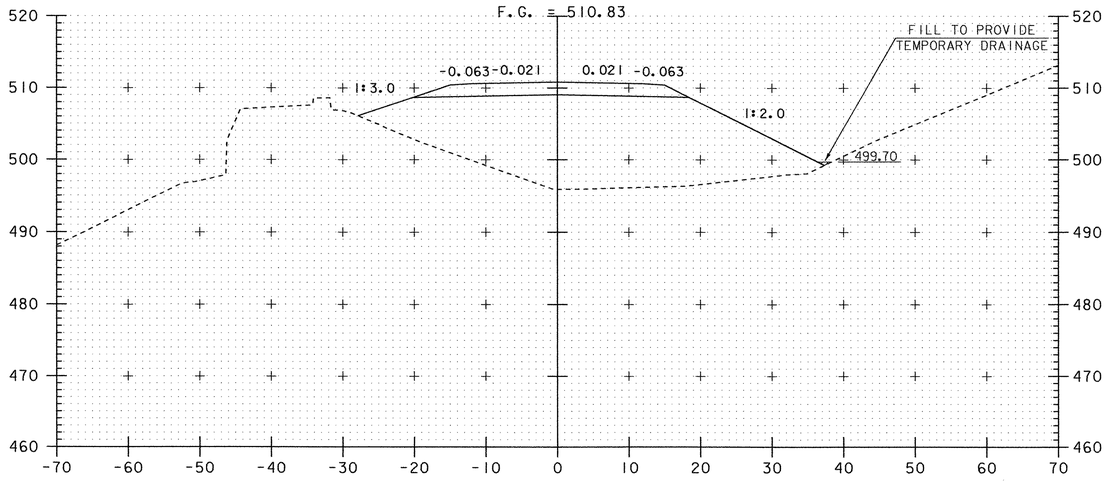
STA 106+75 LT - END W.W. 4



107+25



106+50



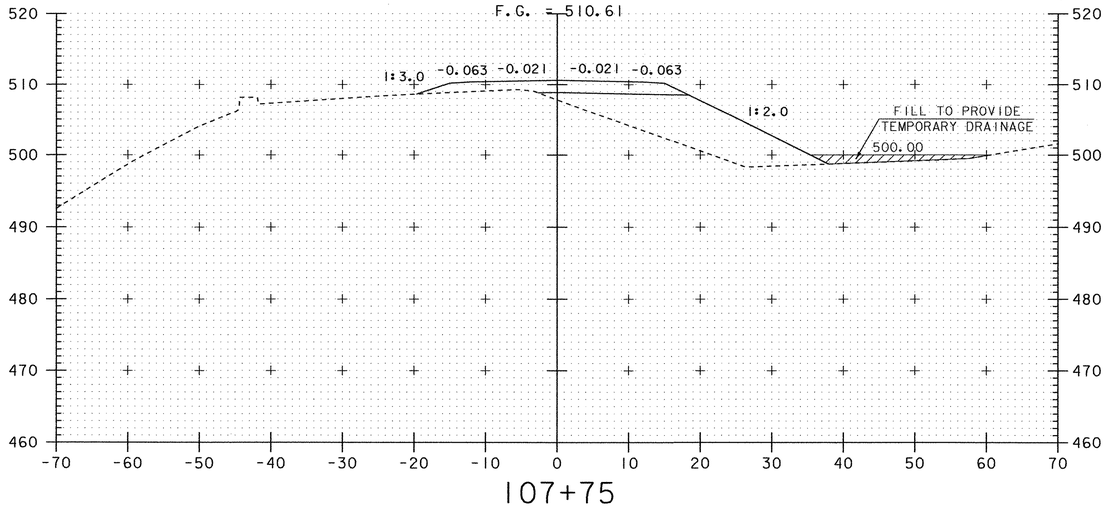
107+00

TEMPORARY DETOUR CROSS SECTIONS
STATION 106+50 TO 107+25

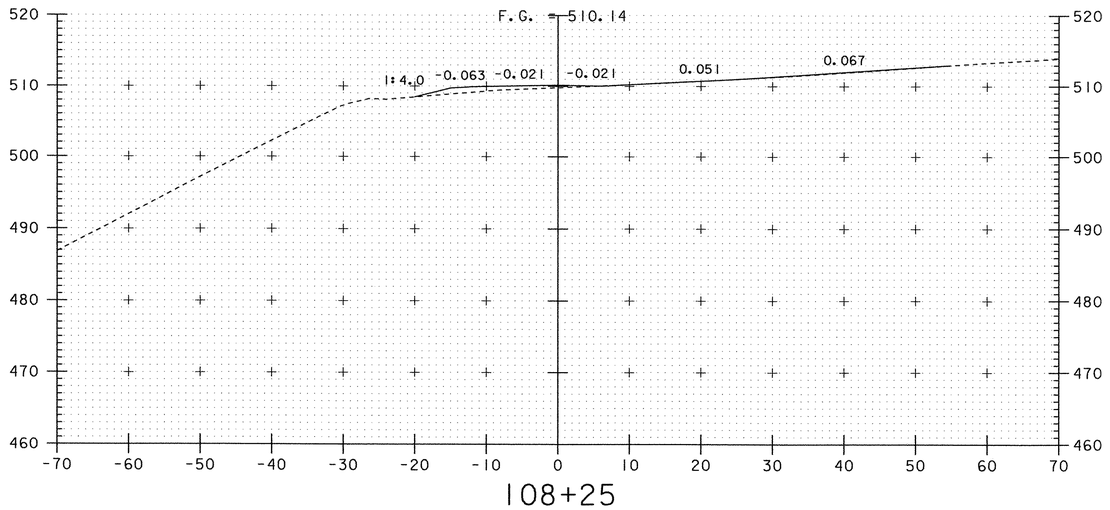
SCALE 1" = 10'-0
10 0 10

PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

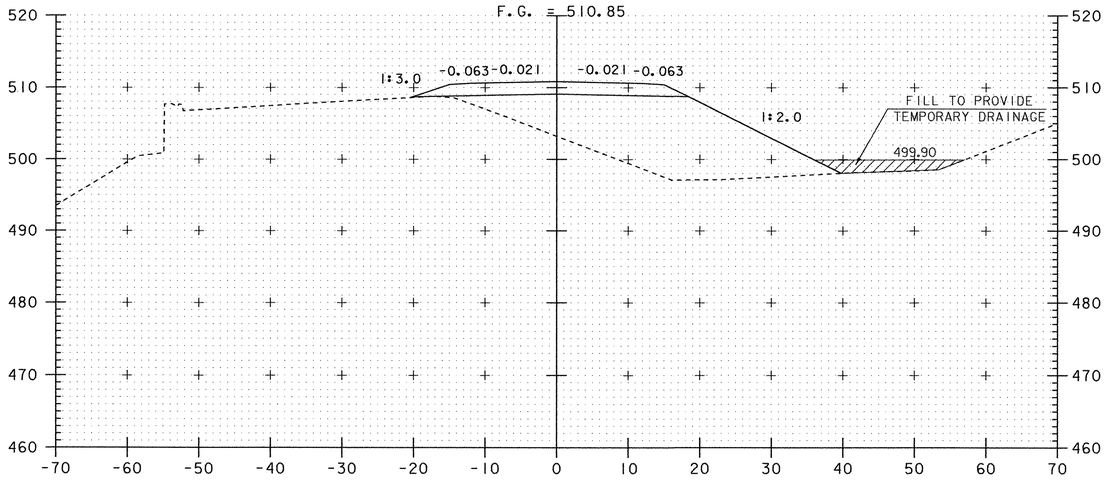
FILE NAME: str7/99a272/sa272xs.dgn		PLOT DATE: 03-FEB-2003	
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	FOWLER / UPMAL	CHECKED BY:	
sa272tx5.1		SHEET 44E	OF 85



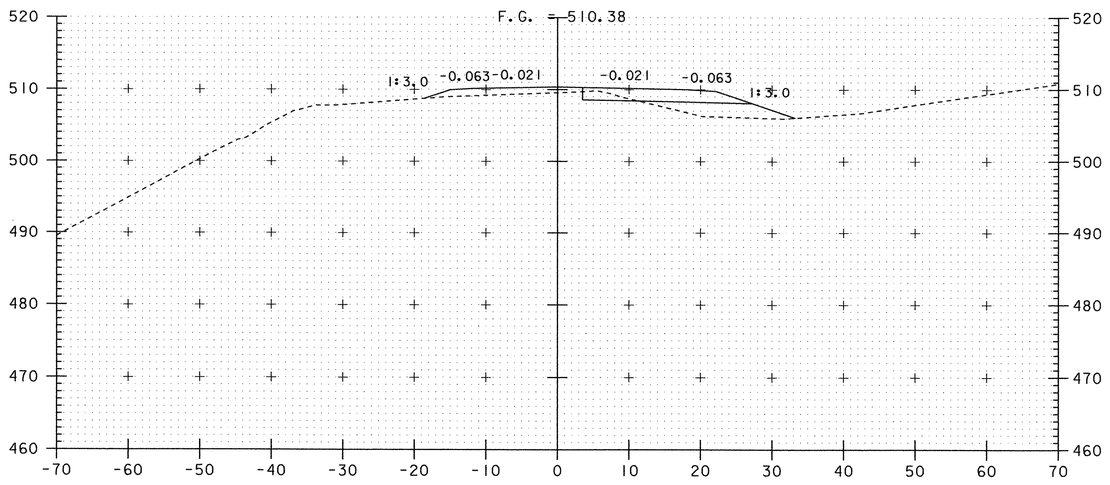
107+75



108+25



107+50



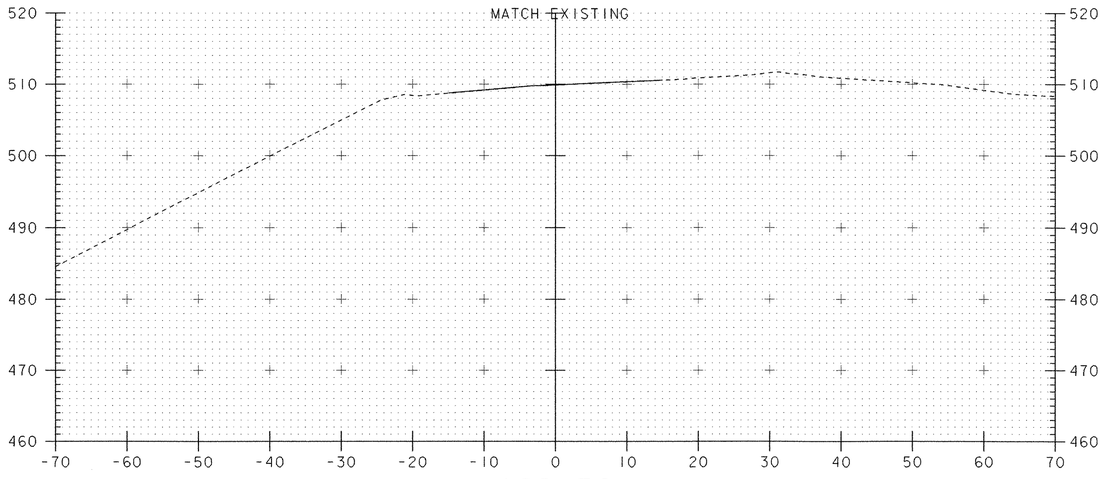
108+00

TEMPORARY DETOUR CROSS SECTIONS
STATION 107+50 TO 108+25

SCALE 1" = 10'-0
10 0 10

PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

FILE NAME:	str7/99a272/sa272xs.dgn	PLOT DATE:	03-FEB-2003
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	FOWLER / UPMAL	CHECKED BY:	
sa272tx6.1		SHEET 44F	OF 85



108+50

END TEMPORARY DETOUR

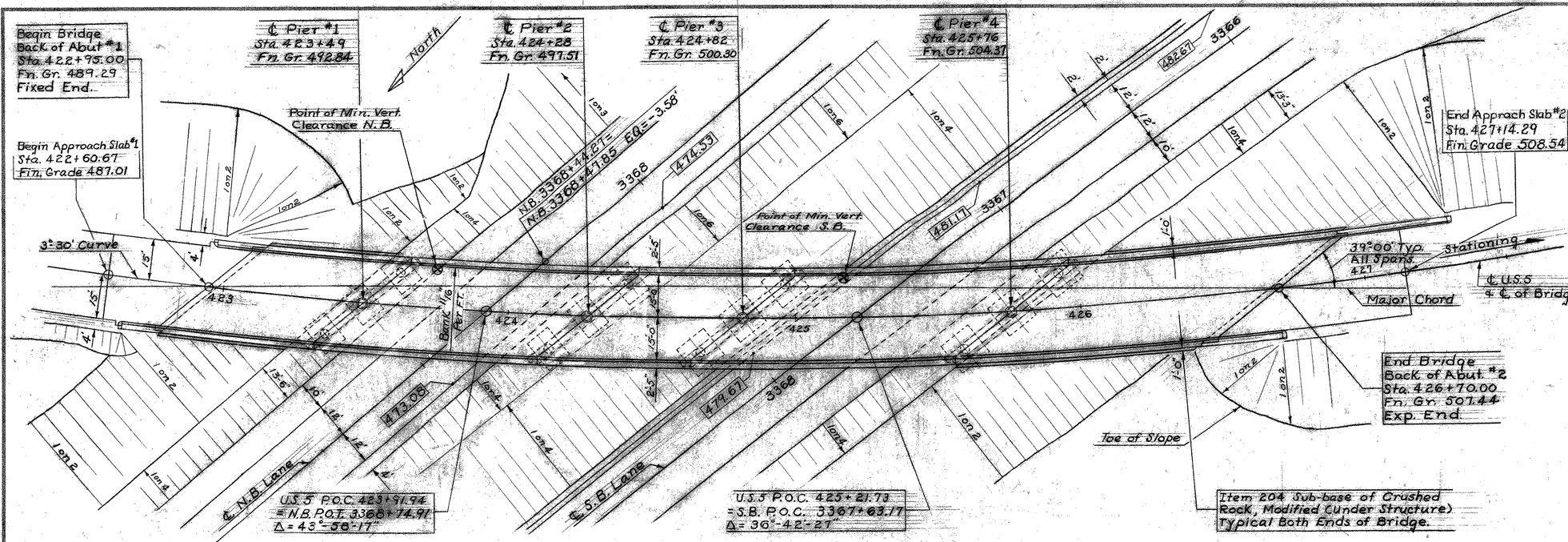
SCALE 1" = 10'-0

10 0 10

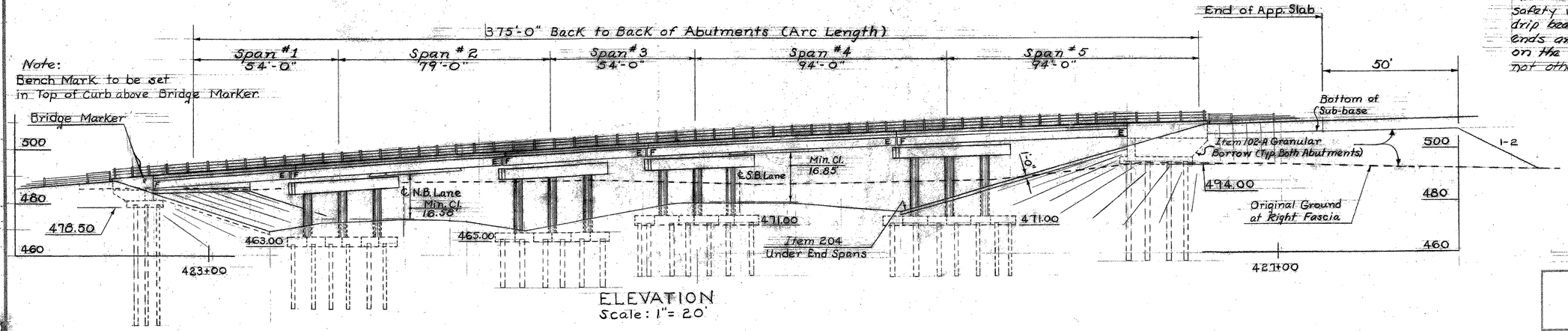
TEMPORARY DETOUR CROSS SECTIONS
STATION 108+50

PROJECT NAME:	HARTLAND
PROJECT NUMBER:	IM 091-1(36)

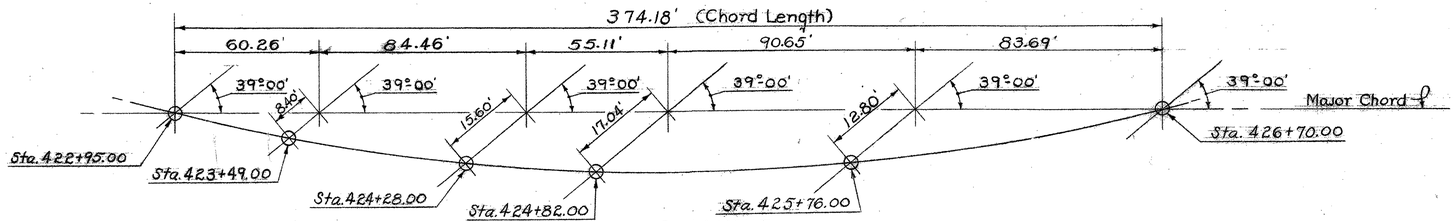
FILE NAME:	str7/99a272/sa272xs.dgn	PLOT DATE:	24-DEC-2002
PROJECT LEADER:	S. FARNSWORTH	DRAWN BY:	K. UPMAL
DESIGNED BY:	FOWLER / UPMAL	CHECKED BY:	
sa272tx7.1		SHEET 44G	OF 85



PLAN
Scale: 1" = 20'



ELEVATION
Scale: 1" = 20'



CURVE LAYOUT
No Scale

- LIST OF BRIDGE SHEETS -

BR-100	General Plan and Elevation
BR-101	Bridge Quantity Sheet
BR-102	Preliminary Information Sheet
BR-103	Auger Borings - Sheet #1
BR-104	Auger Borings - Sheet #2
BR-105	Casing Borings
BR-106	Framing Plan
BR-107	Typical Section, Rail & Granite Curb Lengths
BR-108	Details of Abutment #1 (Fixed End)
BR-109	Details of Abutment #2 (Exp. End)
BR-110	Details of Abutment #2 Wingwalls
BR-111	Pier #1 Layout Details
BR-112	Pier #1 Reinforcing Steel
BR-113	Pier #2 Layout Details
BR-114	Pier #2 Reinforcing Steel
BR-115	Pier #3 Layout Details
BR-116	Pier #3 Reinforcing Steel
BR-117	Pier #4 Layout Details
BR-118	Pier #4 Reinforcing Steel
BR-119	Details of Approach Slab #1
BR-120	Details of Approach Slab #2
BR-121	Reinforcing Schedule - Sheet #1
BR-122	Reinforcing Schedule - Sheet #2

- BRIDGE STANDARDS -

SCB-30-62, Typical Section, Plan View and Quantities
SCB-D1-62, SCB-D2-62, SCB-D3-62, SCB-D4-62, SCB-D5-62, SCB-D6-62, SCB-D7-62, SCB-D8-62, & SCB-D9-62, Details of WF Beam Bridges
SB-5G-62, Sheets #1 & #2, Details of Bridge Railing
G-3a, Dead End Anchorage at Bridge Approach.

- REFERENCE SHEETS -

Interstate Plan, (Scale: 1"=50'), Sta. 335i+00 to 3383+00, (2 Sheets).
Profile of Interstate, Northbound and Southbound, Sta. 335i+00 to 3383+00. (2 Sheets).
U.S. Rte. 5 Plan, (Scale: 1"=50'), Sta. 419+00 to 430+00 (1 Sheet).
Profile of U.S. Rte 5, Sta. 419+00 to 430+00, (1 Sheet).
Interstate Sections, Southbound Sta. 3365+50 to 3368+50, (4 Sheets).
Interstate Sections, Northbound Sta. 3368+00 to 3370+50, (2 Sheets).
U.S. Rte. 5 Sections, Sta. 420+50 to 429+00 (6 Sheets).

- NOTES -

1. For General Notes see Std. Dwg. SCB-D1-62.
2. The superstructure is of Composite WF Beam - Simple Span Design for a 30'-ft. Roadway as per Std. Dwg. SCB-30-62.
3. Bridge seat elevations shown on these plans are for the centerline of bearings.
4. All exposed edges of concrete in the superstructure, abutments, and piers shall be chamfered 1" by 1".
5. Item 440 Water Repellent shall consist of furnishing and applying water repellent on exterior concrete surfaces on top of the safety walks, on the facia and back to the drip bead under the slab, on the sides, ends and bottoms of all pier caps, and on the exposed areas of abutments not otherwise treated.

Stage ■ Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROAD NO. I 91 BRIDGE NO.
General Plan & Elevation
US #5 over I-91
SCALE As Noted
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY L.F.S.
PROJECT NO. I 91-1(22) Cont. #2 (37)
SHEET 42 OF 220 Sheets 42 of 242

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 45 OF 85

BR-100

EARTHWORK

VC.	% GRD	STATION	GRADES ELEVATION ON TAN.	GRADES ELEVATION ON V.C.	CORR. V.C.	DIST.	AREA	CU.YDS.	AREA	CU.YDS.	AREA	CU.YDS.	AREA	CU.YDS.

BRIDGE QUANTITY SHEET

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
BRIDGE DIVISION

NO.	ITEM	UNIT	QUANTITY BREAKDOWN: Appr Slab 1	Abut No. 1	Pier No. 1	Pier No. 2	Pier No. 3	Pier No. 4	Abut No. 2	Appr Slab 2	Super-Structure	NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	CY		~~46~~ 132	103 V	~~86~~ 77	~~114~~ 109	~~109~~ 131	~~40~~ 37					~~498~~	589
204	Subbase of Crushed Rock (Modified Under Structure)	CY		~~10~~ 60					130 V					~~200~~	198
222	Gravel Backfill	CY		28 V					~~76~~ 77					~~104~~	105
* 318	Tar Emulsion for Bridge Floors	Gal	47							59	500			606	
* 361B	Bituminous Concrete Pavement Mod. Dense Graded Top Course)	Ton	10							12	122			144	
* 372A	Joint Sealer: Hot Poured	LF									160			160	
372C	Joint Sealer - Preformed Type A	LF									150			150	
372C	Joint Sealer - Preformed Type B	LF									80			80	
401AA	Concrete Class AA (Mod)	CY			44	47 V	46 V	~~58~~ 57			~~414~~ 424			~~608~~	612
401B	Concrete Class B (Mod)	CY	40 V	~~66~~ 67	42 V	42 V	56 V	56 V	~~157~~ 102	51 V				~~510~~	516
402	Reinforcing Steel	LB	~~6230~~ 6205	~~3720~~ 3,715	~~13,710~~ 13,926	~~14,770~~ 14,540	~~16,240~~ 16,610	~~18,400~~ 18,579	~~9160~~ 9,188	~~7830~~ 7,825	~~98,170~~ 97,158			~~187,960~~ 1 V	187,746 1
403	Spiral Reinforcement (10380")	LS													
404A	Structural Steel	LB									~~503866~~ 496,775			~~503860~~	496,775
407	Asphaltic Asbestos Coating	SY		5 V	~~23~~ 22	~~24~~ 23	24 V	26 V	7 V					~~109~~	107
501	Furnishing Equipment for Driving Piles	LS												1 (½) V	1/2
502B	Treated Timber Piling	LF		~~1035~~ 450	~~664~~ 448	~~720~~ 269	~~960~~ 474	~~960~~ 461	~~1961~~ 1333					~~6500~~	3,441
556C	Granite Bridge Curb (Mod)	LF		231 V					58 V		~~755~~ 751			~~836~~	832
572	Bridge Railing	LF									830 V			830 V	830
440	Water Repellant	Gal		~~11~~ 8	~~8~~ 7½	~~8~~ 7¾	~~8~~ 8	~~9~~ 8½	~~8~~ 9		~~11~~ 12			~~86~~	80¾
	Cut-offs @ 50% Unit Price	LF		285	302	153	116	464	588						1908

* Roadway Quantities

Stage I Construction

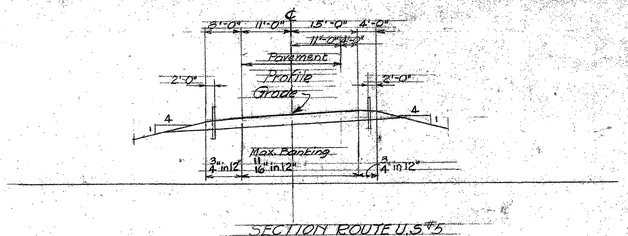
Compiled: AER
Checked: J.J.C.

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 46 OF 85

BRIDGE(S) AT STATION(S) U.S. 5 P.O.C. 423+91.94 = N.B.P.O.T. 3368+74.91
LOCATION(S) U.S. Rte. 5 over Interstate I 91

Hartland – Hartford
BR 101 OF 122

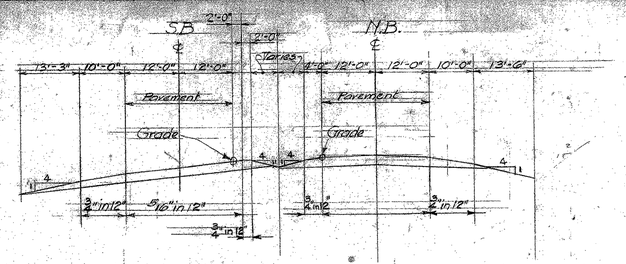
PROJECT NO. I 91-1(22) Cont. #2
SHEET NO. 43 OF 220



SECTION ROUTE U.S.#5

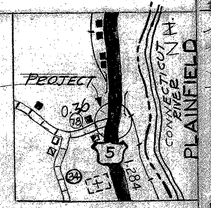
TYPICAL HIGHWAY SECT. ~~STA~~ ~~TO STA~~

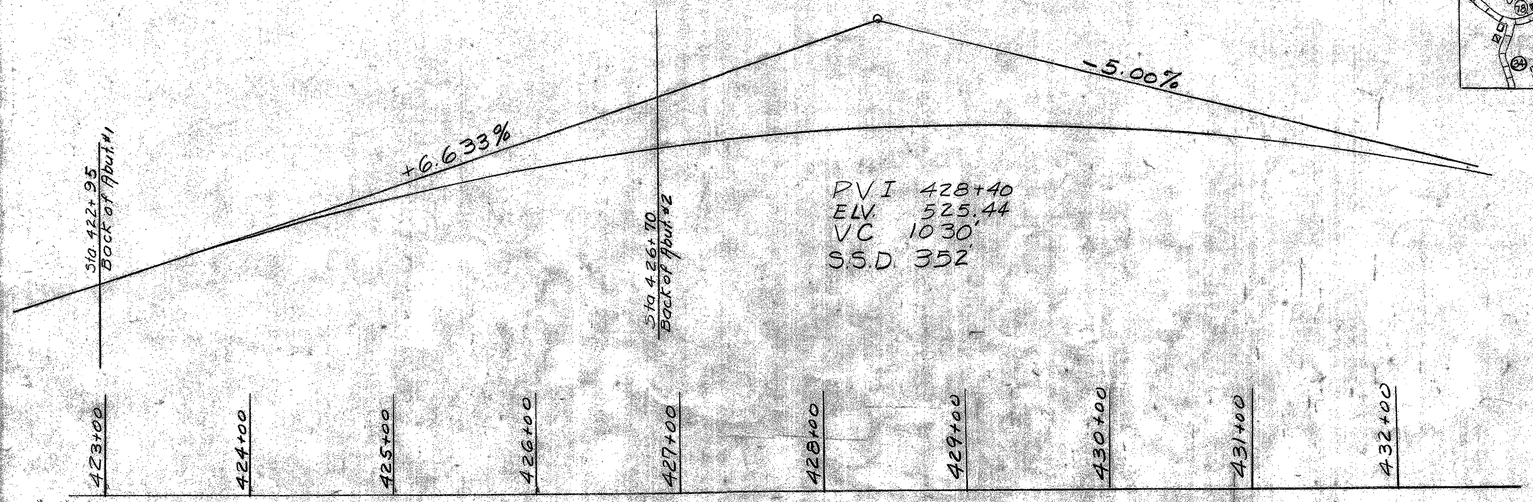
SCALE 16"=1'-0"



NEW HIGHWAY: TYPICAL SECTION OF INTERSTATE

SCALE

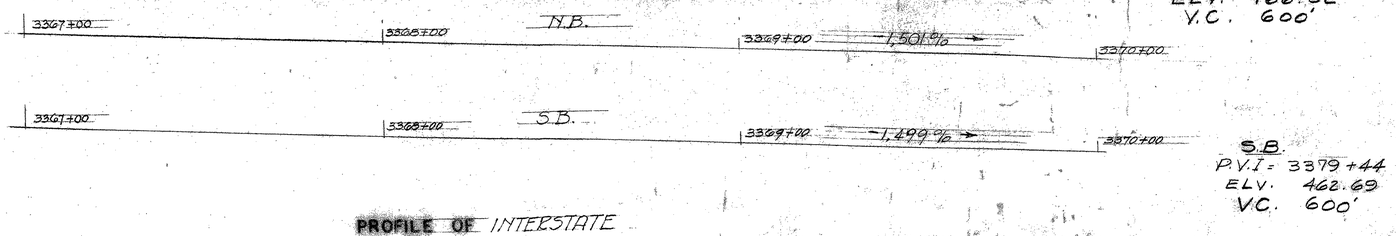




PROFILE ROUTE U.S.#5

~~PLATE~~

SCALE



N.B.
P.V.I 3373+70
ELV. 466.02
V.C. 600'

S.B.
P.V.I = 3379+44
ELV. 462.69
V.C. 600'

PROFILE OF INTERSTATE

SCALE

HIGHWAY NO I 91 NAME OF HIGHWAY U.S.#5

STRUCTURE NO ____ COUNTY WINDSOR TOWN HARTLAND

PROJECT NO I 91-1(22) LOCATION U.S.#5 OVER INTERSTATE (3370+00±)

EXISTING STRUCTURE

1 RATED LOADING OF EXISTING STRUCTURE ____

2 TYPE OF EXISTING STRUCTURE ____

3 UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE ____

4 WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE ____ COST OF REMOVAL ____

5 SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE ____

6 SHOULD NEW TEMPORARY STRUCTURE BE BUILT ____

7 ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE ____ WATERWAY TO ORDINARY H.W. ____

8 EXTREME HIGH WATER AT EXISTING STRUCTURE ____ WATERWAY TO EXTREME H.W. ____

9 SPAN OF EXISTING BRIDGE UPSTREAM ____ WATERWAY TO EXTREME H.W. ____

SPAN OF EXISTING BRIDGE DOWNSTREAM ____ WATERWAY TO EXTREME H.W. ____

10 TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS ____

11 DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE ____

12 IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED ____

13 ADDITIONAL WATERWAY AREA PROVIDED ____

NEW STRUCTURE

1 RECOMMENDED TYPE OF STRUCTURE 5-W Beam Composite Simple Spans

2 RECOMMENDED CLEAR SPAN OR SPANS 54-79-54-94-94

MEASURED PARALLEL TO ℄ NEW HIGHWAY ____

MEASURED AT RIGHT ANGLES TO ℄ STREAM ____

3 ARE THERE OBJECTIONS TO A PIER IN THE STREAM, ANSWER YES OR NO ____

4 ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE —

5 EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE ____ SOURCE OF INFORMATION ____

6 IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE? ____

7 DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? ____ IS ORDINARY RISE RAPID? ____

8 LOW WATER ELEVATION AT NEW STRUCTURE ____

9 DRAINAGE AREA IN ACRES ABOVE STRUCTURE ____ CHARACTER OF TERRAIN ____

10 IS STREAM EVER DRY? ____

11 VELOCITY OF STREAM AT HIGH WATER STAGE ____ ESTIMATED DISCHARGE ____

12 AREA FULL OPENING ____ AREA BELOW ORDINARY H.W. ____

13 CHARACTER OF BOTTOM ____ DRIFT ____ ICE ____

14 ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE ____

15 VERTICAL CLEARANCE ABOVE FLOOD ELEVATION No ____

16 ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE ____ BOTH SIDES ____

17 RECOMMENDED TYPE OF PAVEMENT 1½" Bituminous Concrete Pav't and 7½" Slab

18 TRAFFIC TO BE MAINTAINED UNDER ITEM NO. 108 ONE OR TWO WAYS ____ PROBABLE COST ____

19 PROBABLE COST OF CLEARING AND SNAGGING STREAM CHANNEL AT STRUCTURE SITE N/A

20 SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES? NO

21 ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS 20 Tons/sq.ft. SHOULD PILES BE USED? Yes EST. LGTH. *

FOUNDATION INFORMATION

OBTAINED FOR DESIGN PURPOSES ONLY, AND THE STATE ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION.

For Details of Superstructure See SCB-30-62

*Estimated Length of Piles (Treated Timber Piles)

Abut. #1 — 45'
Pier #1 — 24'
Pier #2 — 20'
Pier #3 — 20'
Pier #4 — 20'
Abut. #2 — 37'

Design Stresses:

Structural Steel (A-36) fs = 20,000 psi

Reinforcing Steel fs = 20,000 psi

Concrete fc = 3000 psi N=10

Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

IN THE TOWNS OF
HARTLAND - HARTFORD

ROUTE NO. I-91 LOG STA.
U.S.#5 OVER INTERSTATE

SURVEYED BY D.R.B. & Q.K.B. ENGINEER IN CHARGE R.C.G. SCALE ____ DATE ____

PROJECT NO. I 91-1(22) SHEET 44 OF 220

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 47 OF 85

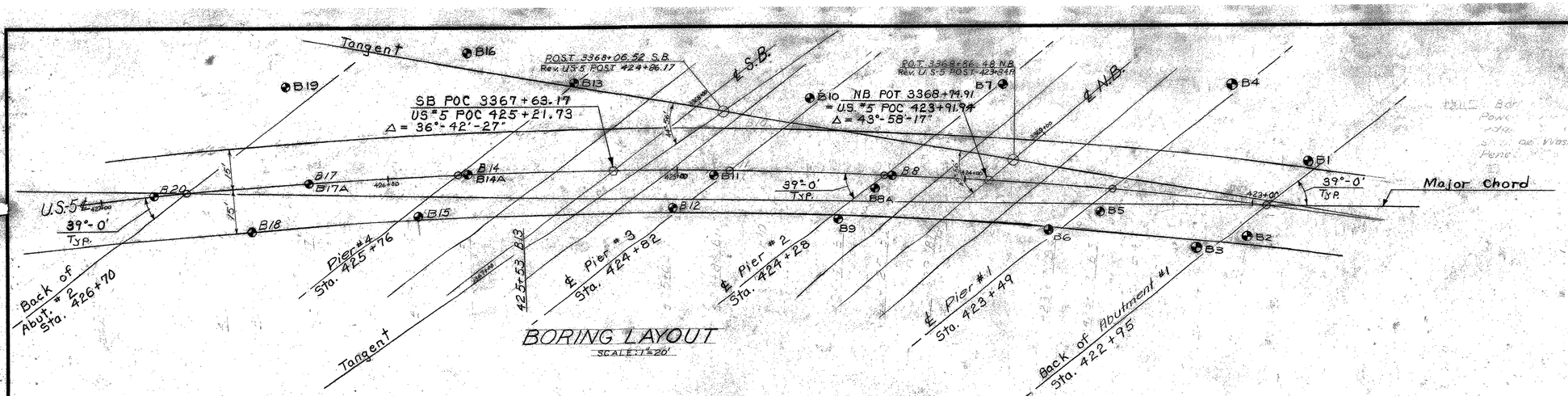
Recommended for Approval 8/5/63
BRIDGE ENGINEER

Recommended for Approval R.C. Curtis 8/9/63
ASST. CHIEF ENGINEER

Approved by A.D. Bullock 8/11/63
Chief Engineer

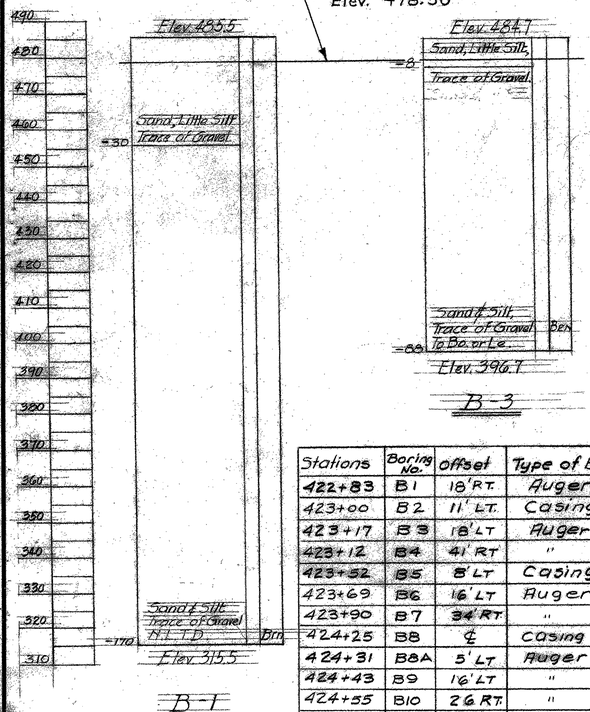
CONT #2

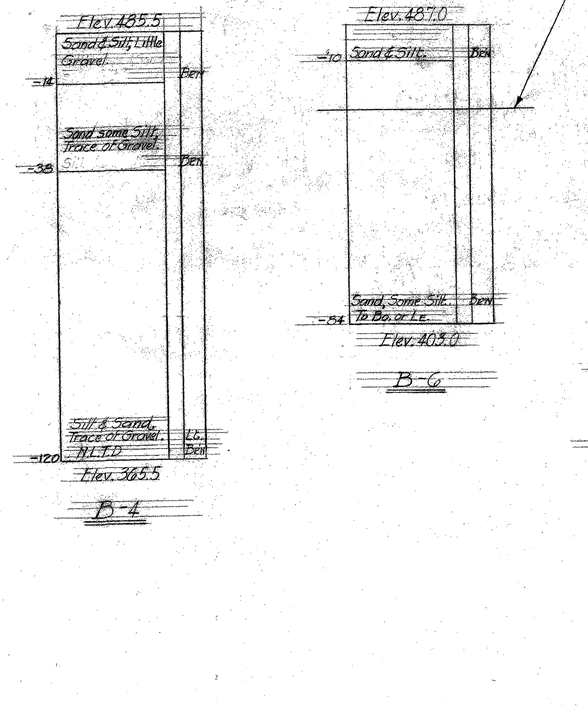
BR-102

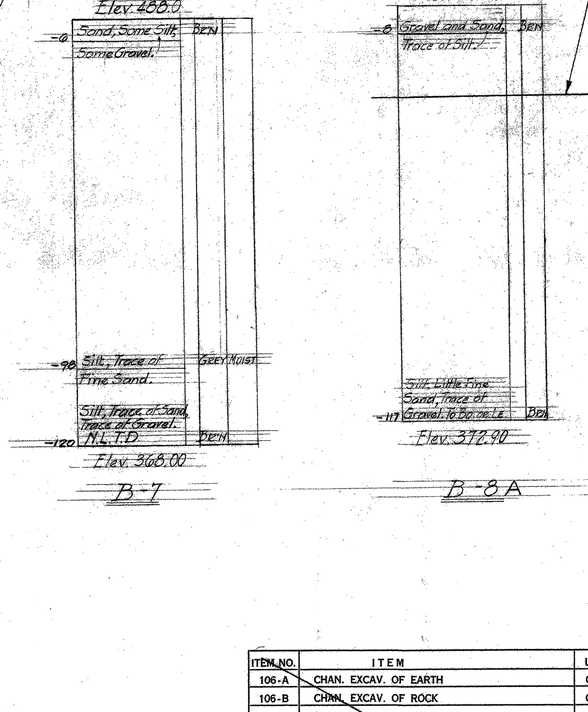


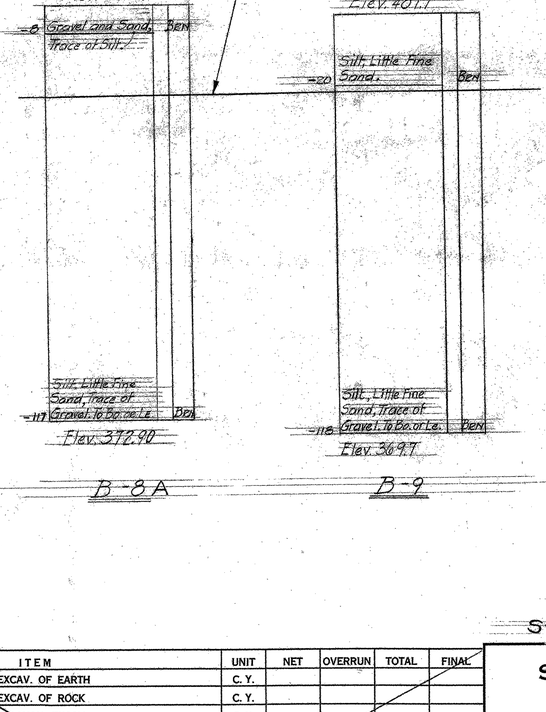
BORING LAYOUT

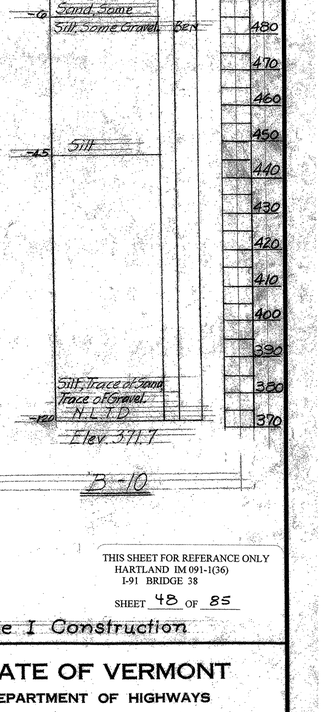
SCALE: 1"=20'











Stations	Boring No.	offset	Type of Boring
422+83	B1	18' RT.	Auger
423+00	B2	11' LT.	Casing
423+17	B3	18' LT	Auger
423+12	B4	41' RT	"
423+52	B5	8' LT	Casing
423+69	B6	16' LT	Auger
423+90	B7	34' RT	"
424+25	B8	℄	Casing
424+31	B8A	5' LT	Auger
424+43	B9	16' LT	"
424+55	B10	26 RT	"
424+87	B11	2' LT	"
425+01	B12	13 LT	"
425+35	B13	31' RT	"
425+72	B14A	℄	"
425+73	B14	℄	Casing
425+90	B15	14' LT	Auger
425+72	B16	42' RT	"
426+27	B17	℄	Casing
426+27	B17A	℄	Auger
426+48	B18	15' LT	Casing
426+33	B19	34' RT	Auger
426+81	B20	℄	Casing

Casing: Outside Diameter 2 5/8"
Inside " 1 7/8"
Wtg. of Hammer 350 #
Hammer Fall 24"

ITEM NO.	ITEM	UNIT	NET	OVERRUN	TOTAL	FINAL
106-A	CHAN. EXCAV. OF EARTH	C. Y.				
106-B	CHAN. EXCAV. OF ROCK	C. Y.				
106-C	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.				
401-B	CONC. CLASS B (MOD.)	C. Y.				
402	REINF. STEEL	LBS.				
407	ASPHALTIC-ASB. COATING	S. Y.				
502-B	TREATED TIMBER PILING	L. F.				
503	SPLICES FOR STEEL PILING	EA.				
504	STEEL PILING	L. F.				
502-A	UNTREATED TIMBER PILING	L. F.				

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 48 OF 85

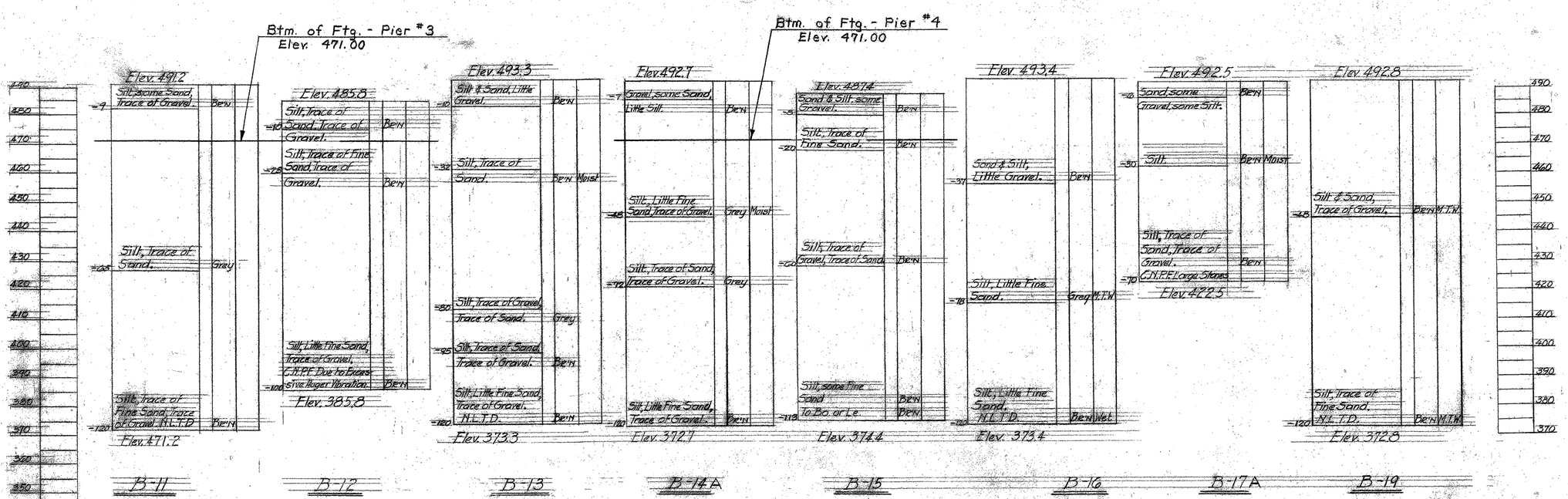
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND - HARTFORD
ROUTE NO. US 5 OVER INTERSTATE
AUGER BORINGS
(Sheet #1)
SCALE 1" = 20'
SURVEYED BY
DRAWN BY G.V.K. CHECKED BY G.V.K.
PROJECT NO. I-91-1(22)CONT #2
SHEET 45 OF 220

BR-103

K+E PRINTED IN U.S.A. D. L. M. INC. 67560



ITEM NO.	ITEM	UNIT	NET	OVERRUN	TOTAL	FINAL
106-A	CHAN. EXCAV. OF EARTH	C. Y.				
106-B	CHAN. EXCAV. OF ROCK	C. Y.				
106-C	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.				
401-B	CONC. CLASS B (MOD.)	C. Y.				
402	REINF. STEEL	LBS.				
407	ASPHALTIC-ASB. COATING	S. Y.				
502-B	TREATED TIMBER PILING	L. F.				
503	SPLICES FOR STEEL PILING	EA.				
504	STEEL PILING	L. F.				
502-A	UNTREATED TIMBER PILING	L. F.				

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 49 OF 85

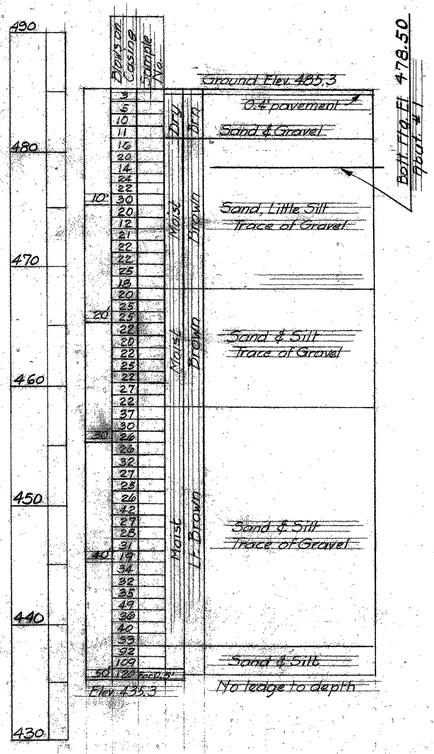
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

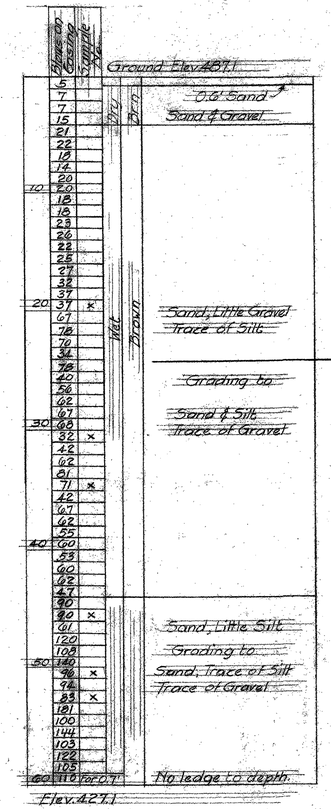
TOWN OF HARTLAND - HARTFORD
ROUTE NO. U.S. 5 OVER INTERSTATE
AUGER BORINGS
(Sheet # 2)
SCALE 1" = 20'
SURVEYED BY
DRAWN BY D.E.B. CHECKED BY G.V.K.
PROJECT NO. I-91-1(22) CONT. 2
SHEET 46 OF 220

BR-104

IX R166 S. L. M. INC. 6/013



B-2



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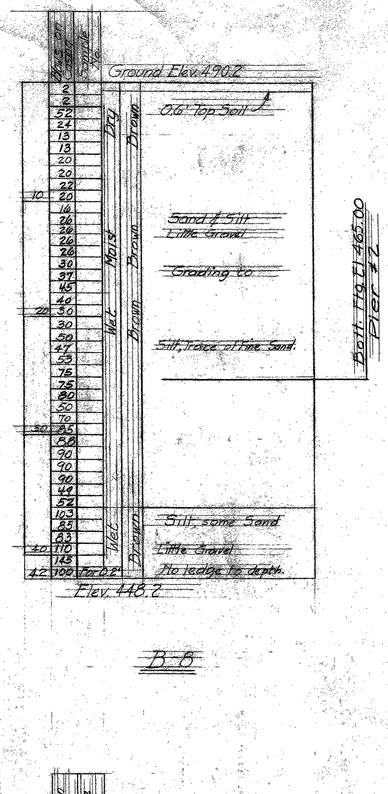

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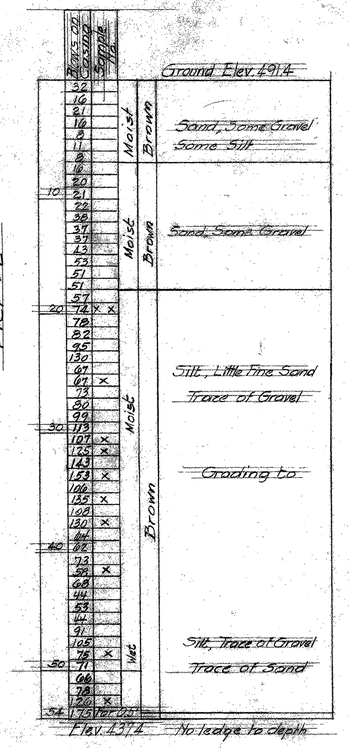

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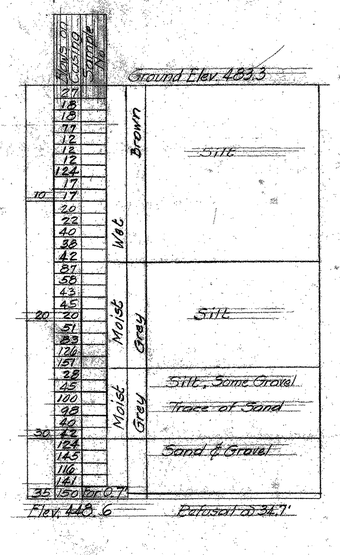

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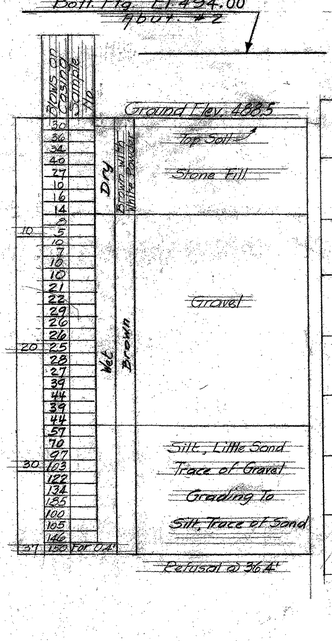

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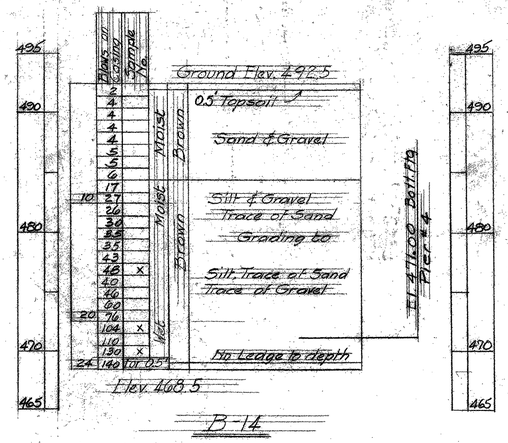


B-14

Note: X Indicated sample taken - No blow Counts

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 50 OF 85

Stage I Construction

ITEM NO.	ITEM	UNIT	NET	OVERRUN	TOTAL	FINAL
106-A	CHAN. EXCAV. OF EARTH	C. Y.				
106-B	CHAN. EXCAV. OF ROCK	C. Y.				
106-C	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.				
401-B	CONC. CLASS B (MOD.)	C. Y.				
402	REINF. STEEL	LBS.				
407	ASPHALTIC-ASB. COATING	S. Y.				
502-B	TREATED TIMBER PILING	L. F.				
503	SPLICES FOR STEEL PILING	EA.				
504	STEEL PILING	L. F.				
502-A	UNTREATED TIMBER PILING	L. F.				

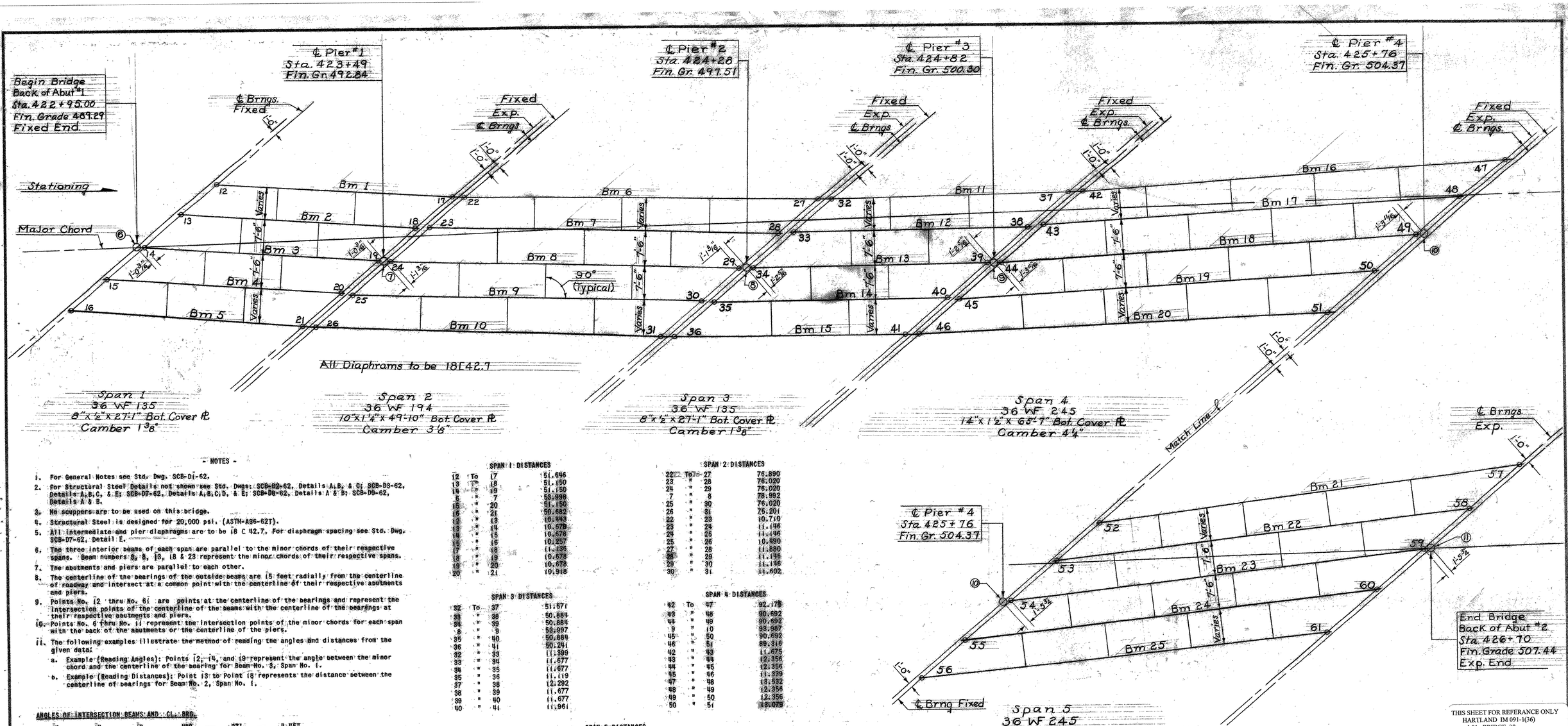
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND - HARTFORD
ROUTE No. U.S. 5 OVER INTERSTATE
CASING BORINGS

SCALE 1" = 6'
SURVEYED BY
DRAWN BY J.K.P. G.V.K. CHECKED BY G.V.K.
PROJECT No. I-91-1(22) CONT. #2
SHEET 47 OF 220

BR-105

K+E PRINTED IN U.S.A. B. L. M. INC. 05112



- NOTES -

1. For General Notes see Std. Dwg. SCB-D1-62.
2. For Structural Steel Details not shown see Std. Dwgs: SCB-D2-62, Details A,B, & C; SCB-D3-62, Details A,B,C, & E; SCB-D7-62, Details A,B,C,D, & E; SCB-D8-62, Details A & B; SCB-D9-62, Details A & B.
3. No scuppers are to be used on this bridge.
4. Structural Steel is designed for 20,000 psi. (ASTM-A36-62T).
5. All intermediate and pier diaphragms are to be 18 C 42.7. For diaphragm spacing see Std. Dwg. SCB-D7-62, Detail E.
6. The three interior beams of each span are parallel to the minor chords of their respective spans. Beam numbers 8, 8, 13, 18 & 23 represent the minor chords of their respective spans.
7. The abutments and piers are parallel to each other.
8. The centerline of the bearings of the outside beams are 15 feet radially from the centerline of roadway and intersect at a common point with the centerline of their respective abutments and piers.
9. Points No. 12 thru No. 61 are points at the centerline of the bearings and represent the intersection points of the centerline of the beams with the centerline of the bearings at their respective abutments and piers.
10. Points No. 6 thru No. 11 represent the intersection points of the minor chords for each span with the back of the abutments or the centerline of the piers.
11. The following examples illustrate the method of reading the angles and distances from the given data:
    a. Example (Reading Angles): Points 12, 14, and 19 represent the angle between the minor chord and the centerline of the bearing for Beam No. 8, Span No. 1.
    b. Example (Reading Distances): Point 13 to Point 18 represents the distance between the centerline of bearings for Beam No. 2, Span No. 1.

ANGLES OF INTERSECTION: BEAMS AND ℄ BRG.

12	14	19	44°	—	37'	—	4.45"
14	16	21	45°	—	8'	—	37.22"
19	17	12	44°	—	4'	—	42.01"
22	24	29	42°	—	17'	—	28.45"
24	26	31	42°	—	54'	—	41.13"
29	27	22	41°	—	42'	—	12.73"
32	34	39	39°	—	57'	—	48.28"
34	36	41	40°	—	34'	—	50.06"
39	37	32	39°	—	19'	—	35.50"
42	44	49	37°	—	22'	—	26.99"
44	46	51	38°	—	9'	—	1.12"
49	47	42	36°	—	40'	—	23.81"
52	54	59	36°	—	5'	—	0.02"
54	56	61	34°	—	50'	—	48.26"
59	57	52	33°	—	17'	—	23.52"

SPAN 1 DISTANCES

12	To	17	51.646
13	"	18	51.150
14	"	19	51.150
6	"	7	58.999
15	"	20	51.150
16	"	21	50.682
12	"	13	10.443
13	"	14	10.679
14	"	15	10.678
15	"	16	10.257
17	"	18	11.135
18	"	19	10.678
19	"	20	10.678
20	"	21	10.918

SPAN 2 DISTANCES

22	To	27	76.890
23	"	28	76.020
24	"	29	76.020
7	"	8	78.992
25	"	30	76.020
26	"	31	75.201
22	"	23	10.710
23	"	24	11.196
24	"	25	11.196
25	"	26	10.890
27	"	28	11.880
28	"	29	11.196
29	"	30	11.196
30	"	31	11.602

SPAN 3 DISTANCES

32	To	37	51.571
33	"	38	50.884
34	"	39	50.884
8	"	9	58.997
35	"	40	50.884
36	"	41	50.241
32	"	33	11.399
33	"	34	11.677
34	"	35	11.677
35	"	36	11.119
37	"	38	12.292
38	"	39	11.677
39	"	40	11.677
40	"	41	11.961

SPAN 4 DISTANCES

42	To	47	92.175
43	"	48	90.692
44	"	49	90.692
9	"	10	93.987
45	"	50	90.692
46	"	51	89.318
42	"	43	11.675
43	"	44	12.356
44	"	45	12.356
45	"	46	11.339
47	"	48	13.532
48	"	49	12.356
49	"	50	12.356
50	"	51	13.079

SPAN 5 DISTANCES

52	To	57	92.316
53	"	58	90.418
54	"	59	90.418
10	"	11	93.987
55	"	60	90.418
56	"	61	88.681
52	"	53	12.583
53	"	54	13.383
54	"	55	13.383
55	"	56	12.125
57	"	58	14.664
58	"	59	13.383
59	"	60	13.383
60	"	61	14.232

* Roadway Quantities

Estimated Superstructure Quantities

	Item No.	Item	Unit	Total	Final
*	318	Tar Emulsion for Bridge Floors	Gal.	500	
*	361-B	Bituminous Conc. Pavement (Mod).	Ton	122	
*	372-A	Joint Sealer Hot-Poured	L.F.	160	
	372-C	Joint Sealer-Pre Formed Type A	L.F.	150	
	401-AA	Concrete Class AA (Mod.)	C.Y.	414	
	402	Reinforcing Steel	LB.	98,170	
	403	Spiral Reinforcement (10 380#)	L.S.	1	
	404-A	Structural Steel	LB.	503806	
	556-C	Granite Bridge Curb (Mod.)	L.F.	755	
	572	Bridge Railing	L.F.	830	
	440	Water Repellent	Gal.	41½	
	372-C	Joint Sealer-Preformed Type B	L.F.	80	

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 51 OF 85

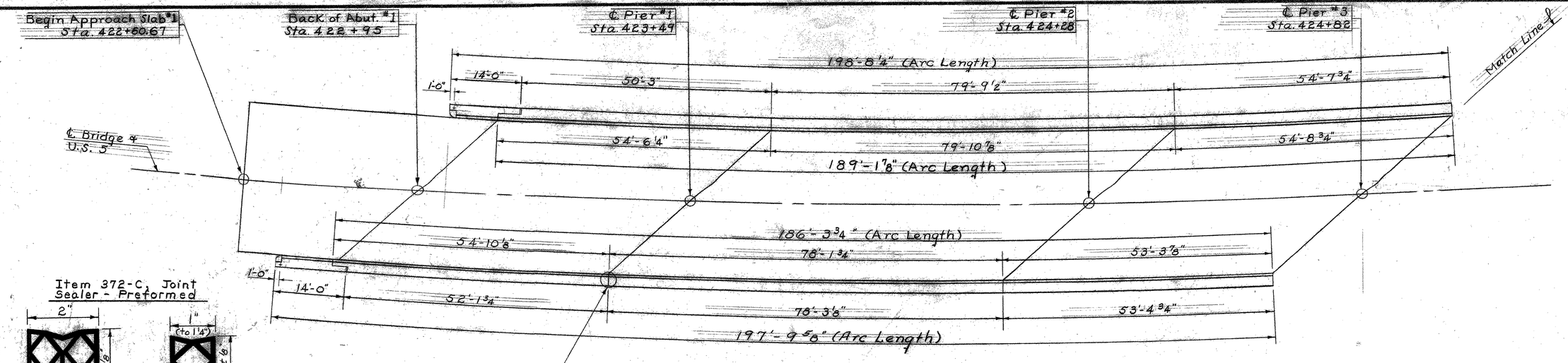
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

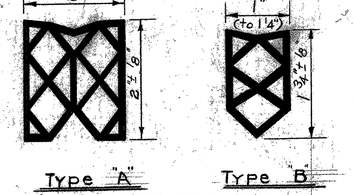
TOWN OF Hartland-Hartford
ROUTE NO. I91 LOG STA.
Framing Plan

SCALE 1"=10'-0"
SURVEYED BY
DRAWN BY JJC+F.W.B CHECKED BY L.E.S.
PROJECT NO. I 91-1(22) Cont 2
SHEET 48 OF 220

BR-106



Item 372-C, Joint Sealer - Preformed

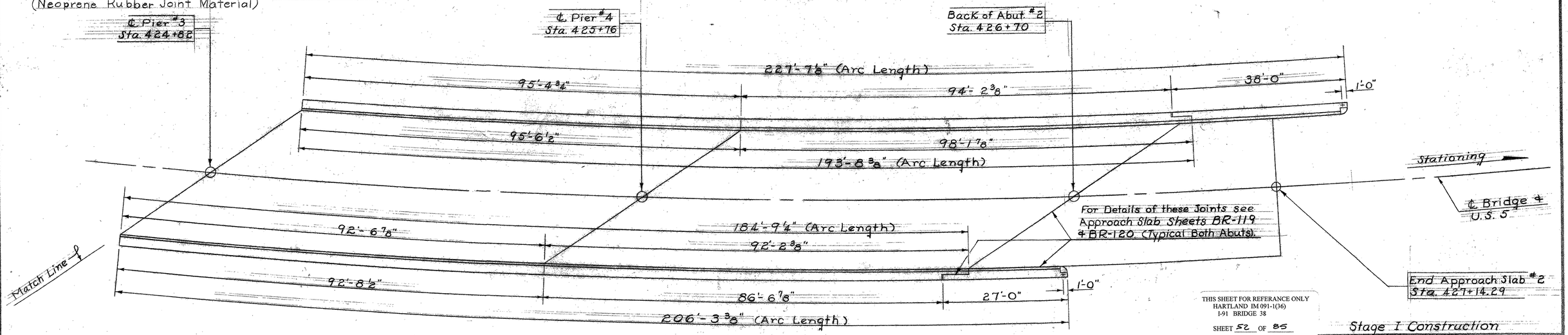


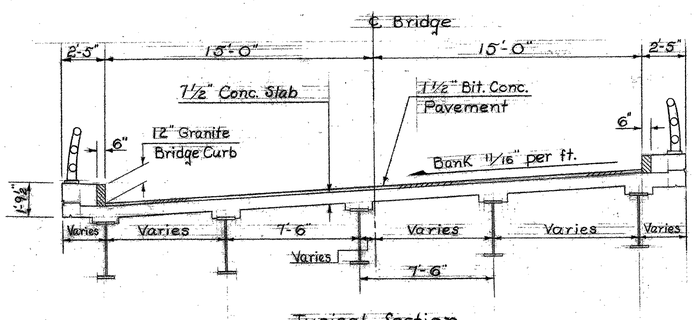
Type "A" Type "B"

(Neoprene Rubber Joint Material)

For details of expansion joints in the curb at the piers, see Std. Dwg. SCB-D3-62, Details A & D. Seal joint with Item 372-C, Type A.

Rail and Granite Curb Lengths
Scale: 1"=10'-0"





Typical Section
Scale: 1'= 4'-0"

NOTES

1. For General Notes See Standard Drawing SCB-D1-62.
2. For Details not shown on the Typical Section see Standard Drawing SCB-D2-62.
3. For Curb Details refer to Standard Drawing SCB-D5-62, Detail A.
4. For Bridge Railing Details see Standard Drawings SB-SG-62, Sheets 1 and 2.
5. The Contractor has the option of using Aluminum or Steel Bridge Railing. Maximum Post spacing for Aluminum Railing will not exceed 7'-2". This spacing may be increased to 10'-0" provided steel railing is used.
6. Item 372-C, Joint Sealer-Preformed, Type A - 150 feet required. Provide a 1 1/8" to 1 1/2" wide by 3 1/4" deep joint for installation.
   Item 372-C, Joint Sealer-Preformed, Type B - 80 feet required. Provide a 1/2" to 5/8" wide x 2 3/4" deep joint for installation.

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C. Y.				
	CHAN. EXCAV. OF ROCK	C. Y.				
	UNCLASS. CHAN. EXCAV.	C. Y.				
	STRUCT. EXCAV.	C. Y.				
	CONC. CLASS AA (MOD.)	C. Y.				
	CONC. CLASS B (MOD.)	C. Y.				
	REINF. STEEL	LBS.				
	ASPHALTIC-ASB. COATING	S. Y.				
	TREATED TIMBER PILING	L. F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L. F.				
	UNTREATED TIMBER PILING	L. F.				

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 52 OF 85

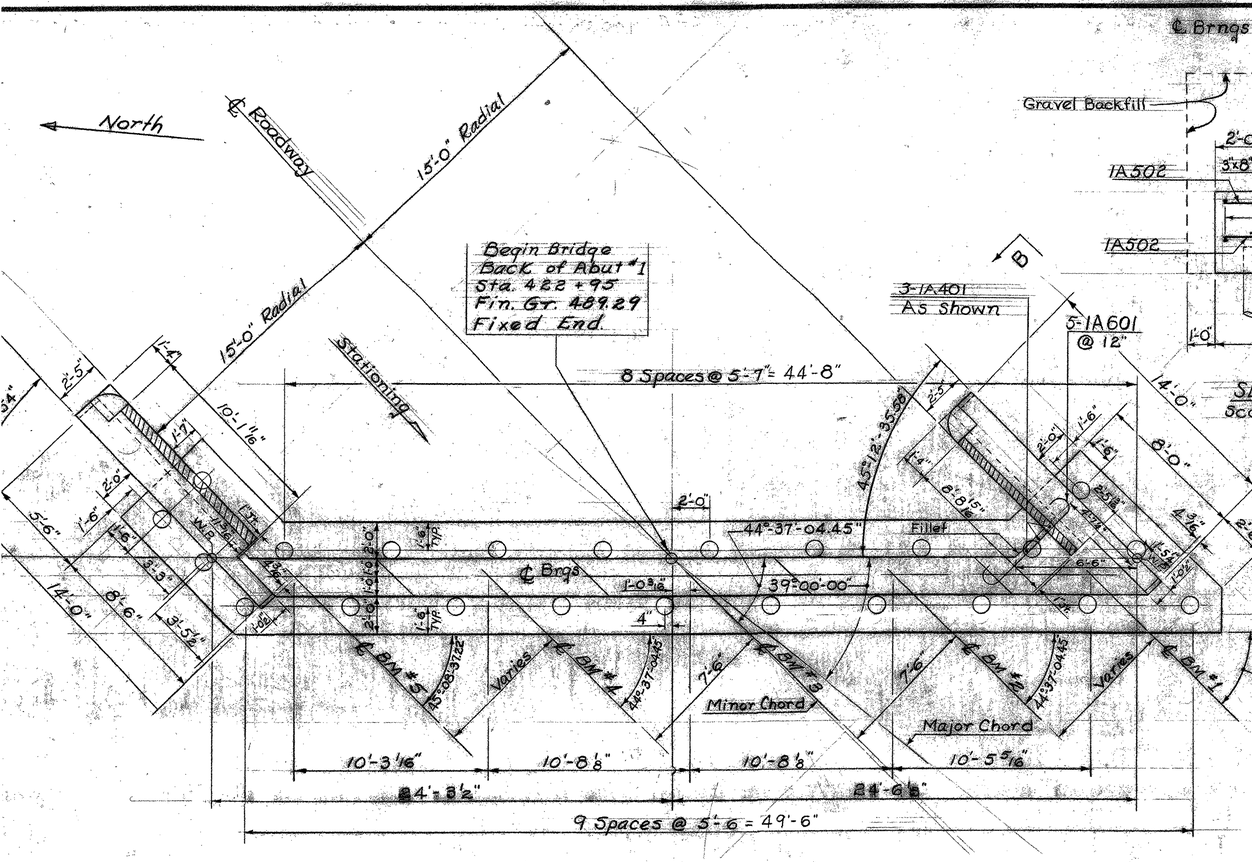
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

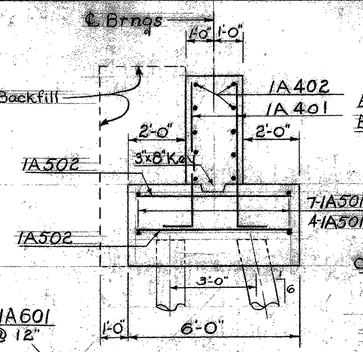
TOWN OF Hartland-Hartford
ROUTE NO. 191 LOG STA.
Typical Section, Rail and Granite Curb Lengths
SCALE As Noted
SURVEYED BY
DRAWN BY JJC+FWB CHECKED BY LES
PROJECT NO. I 91-1(22) Cont. #2
SHEET 49 OF 220

BR-107

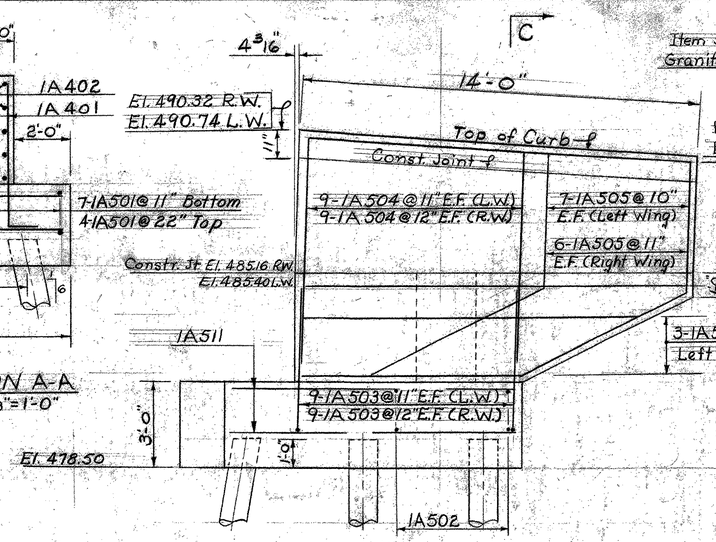
K&E PHOENIX © 71233



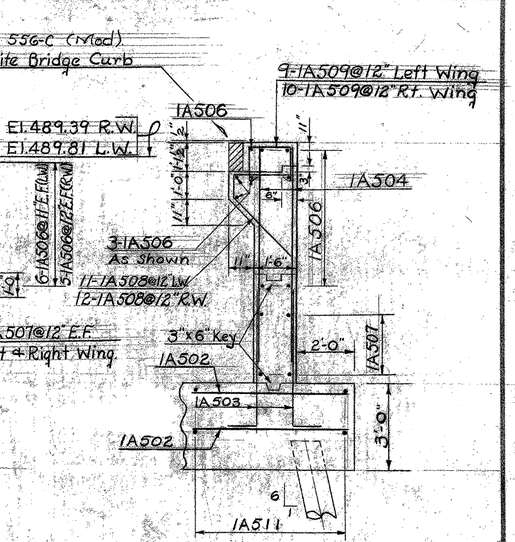
PLAN
Scale: 1/4" = 1'-0"



SECTION A-A
Scale: 3/8" = 1'-0"

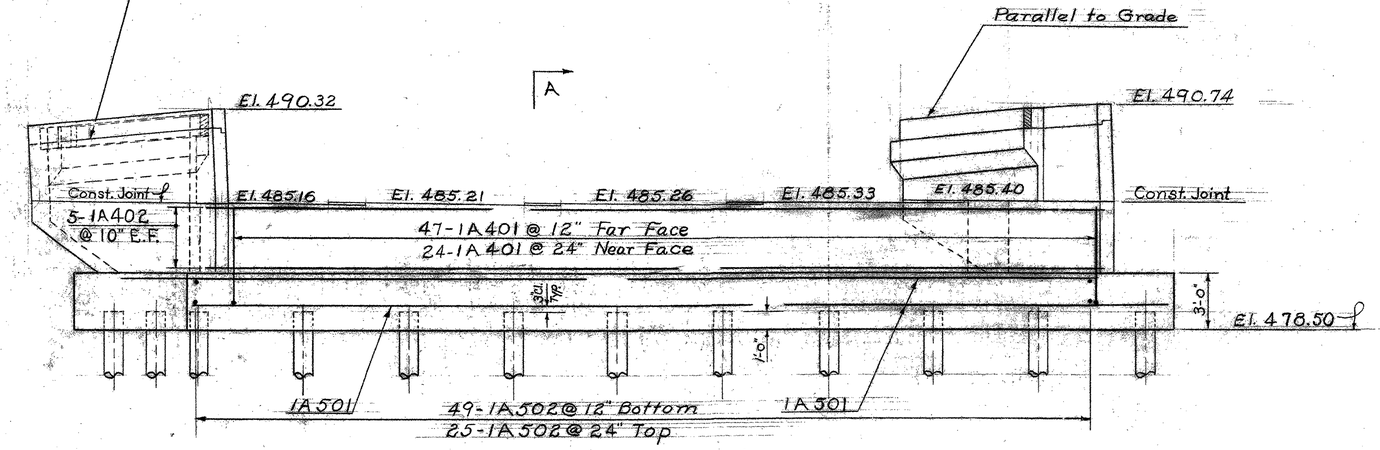


VIEW B-B
Scale: 3/8" = 1'-0"

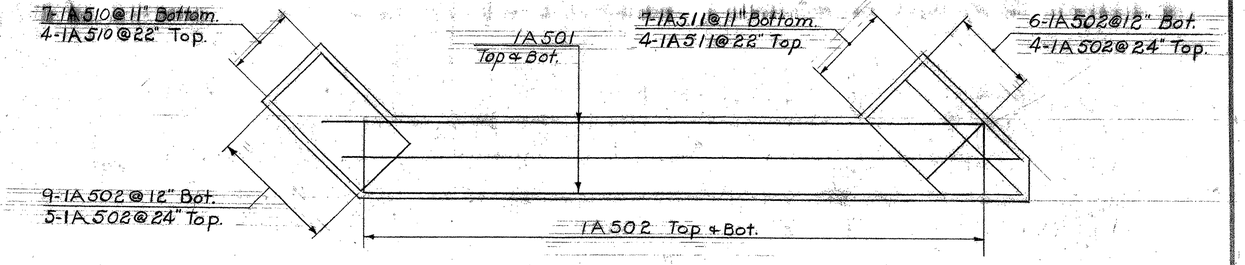


SECTION C-C
Scale: 3/8" = 1'-0"

Note:
Do not construct above this joint until structural steel is in place and final grade is determined. (Typical both sides).



ELEVATION
Scale: 1/4" = 1'-0"



Footing Reinforcement
No Scale

For Notes See Details Abut. No. 2 Wing Walls, Sheet BR-110.

Estimated Length of Piles 45'

E.F. Each Face
F.F. Far Face
N.F. Near Face
L.W. Left Wing
R.W. Right Wing

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 53 OF 85

Stage I Construction

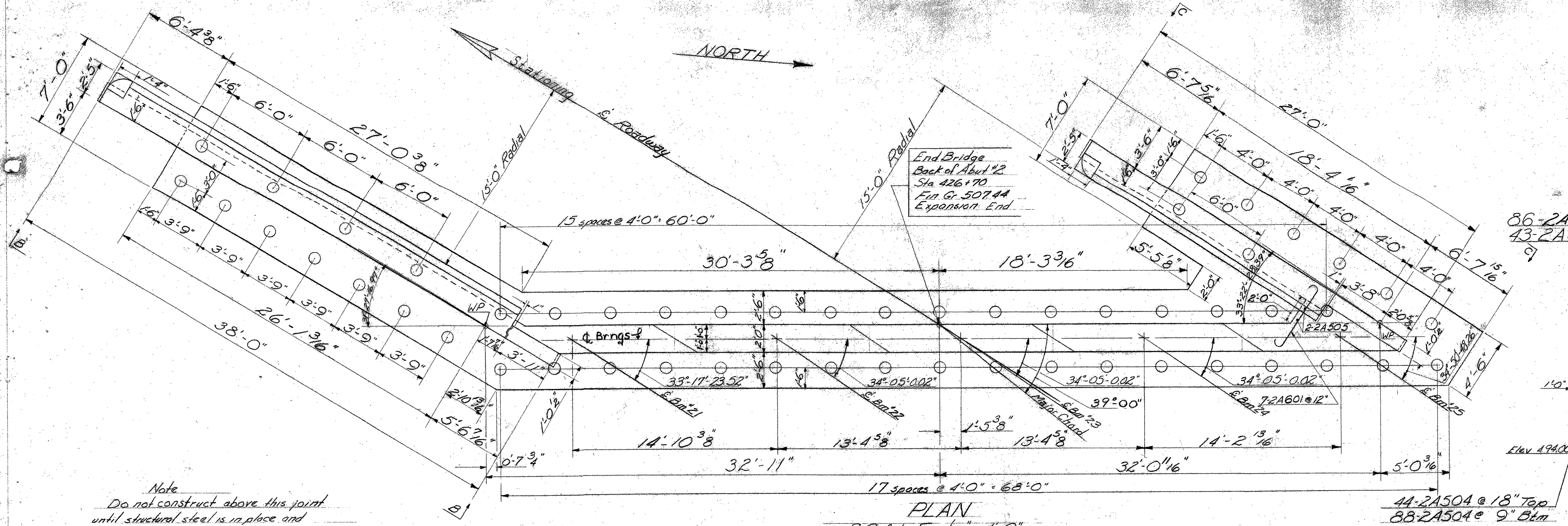
Estimated Quantities Abut. No. 1.

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C. Y.				
	CHAN. EXCAV. OF ROCK	C. Y.				
	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.			~~46~~	132
	CONC. CLASS AA (MOD.)	C. Y.				
401-B	CONC. CLASS B (MOD.)	C. Y.			~~66~~	67
402	REINF. STEEL	LBS.			~~8780~~	3715
407	ASPHALTIC-ASB. COATING	S. Y.			5 V	5
502B	TREATED TIMBER PILING	L. F.			~~1035~~	456
	~~SPLICES FOR STEEL PILING~~ Cut-offs @ 50%	Ea				
440	Water Repellent	Gal.			~~41~~	8
	UNTREATED TIMBER PILING	L. F.				
204	Sub-base of Crushed Rock (Modified Under Structure).	C.Y.			~~90~~	68
222	Gravel Backfill	C.Y.			28 V	28
501	Furnishing Equip. for Driving Piles	L.S.	(See Br. Quantity Sheet).			
556-C	Granite Bridge Curb (Mod.)	L.F.			23 V	23

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

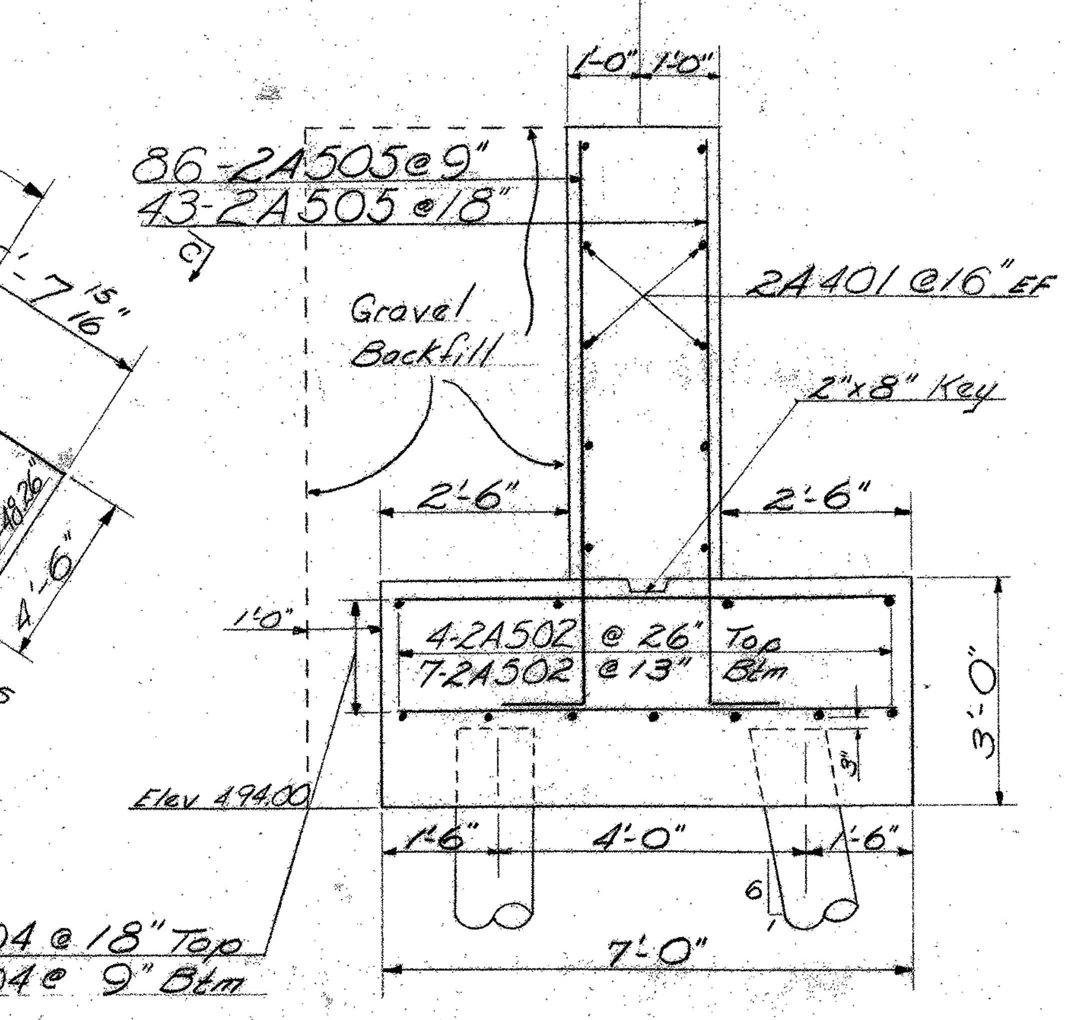
TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Details of Abutment No. 1
(Fixed End)
SCALE As Noted
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY A.E.R.
PROJECT NO. I91-1(22) Cont #2
SHEET 50 OF 220

BR-108

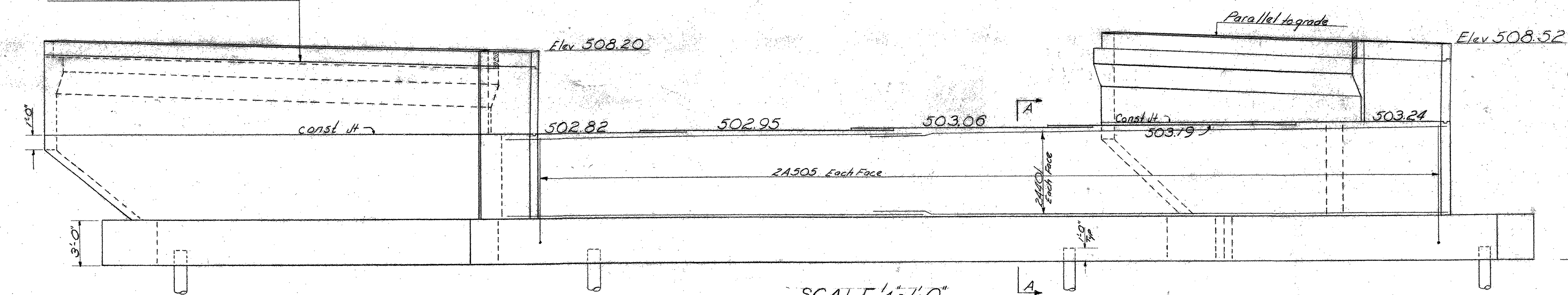


PLAN
SCALE 1/4" = 1'-0"

Note
Do not construct above this joint until structural steel is in place and final grade is determined



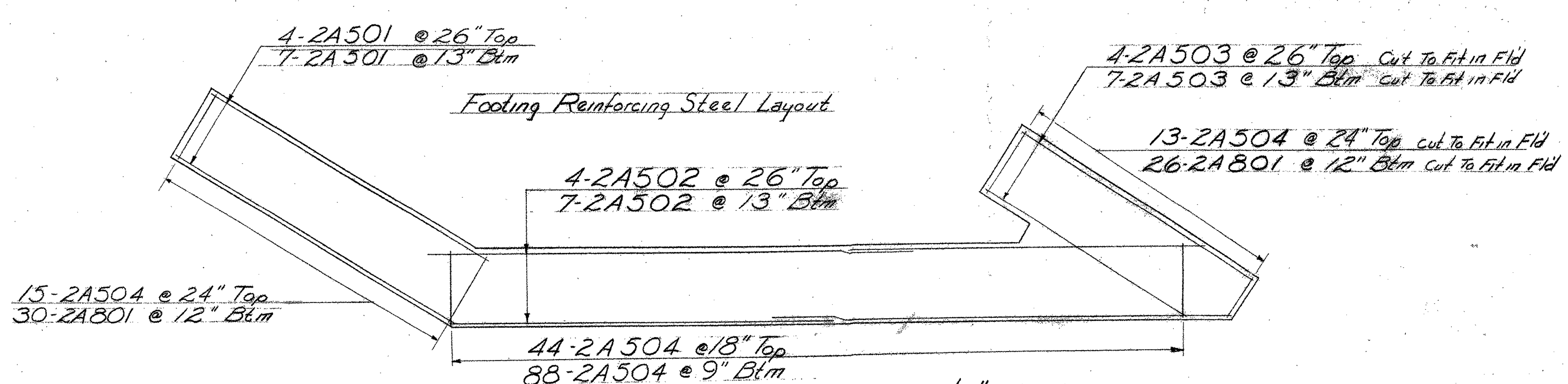
SCALE 1/2" = 1'-0"
SECTION A-A



SCALE 1/4" = 1'-0"
ELEVATION

For Abut #2 notes see sheet BR 110

Estimated Length of Piles 37'



SCALE 1/8" = 1'-0"

Estimated Quantities Abutment No. 2.

ITEM NO.	ITEM	UNIT	NET	OVERRUN	TOTAL	FINAL
106-A	CHAN. EXCAV. OF EARTH	C. Y.				
106-B	CHAN. EXCAV. OF ROCK	C. Y.				
106-C	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.			~~40~~	37
401-B	CONC. CLASS B (MOD.)	C. Y.			~~167~~	162
402	REINF. STEEL	LBS.			~~9190~~	9188
407	ASPHALTIC-ASB. COATING	S. Y.			7✓	7
502-B	TREATED TIMBER PILING	L. F.			~~1961~~	1333
503	~~SPLICES FOR STEEL PILING~~ Cut-offs @ 50%	L.F. ~~EA.~~			0	588
440	Water Repellent	GAL.			~~8¼~~	9
502-A	UNTREATED TIMBER PILING	L. F.				
204	Sub-base of Crushed Rock (Modified under Structure)	C.Y.			130✓	130
222	Gravel Backfill	C.Y.			~~76~~	77
501	Furnishing Equip. For Driving Piles	L.S.	(See Br. Quantity Sheet).			
556-C	Granite Bridge Curb (Mod.).	L.F.			58✓	58

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 54 OF 85

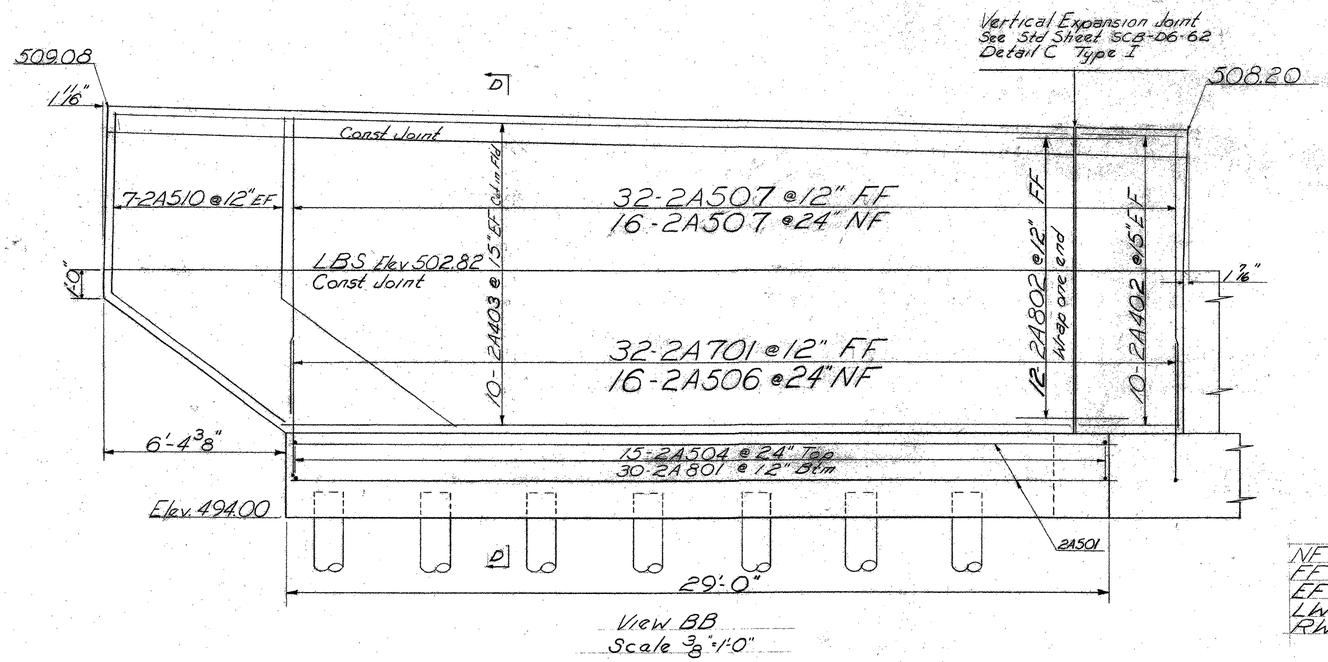
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

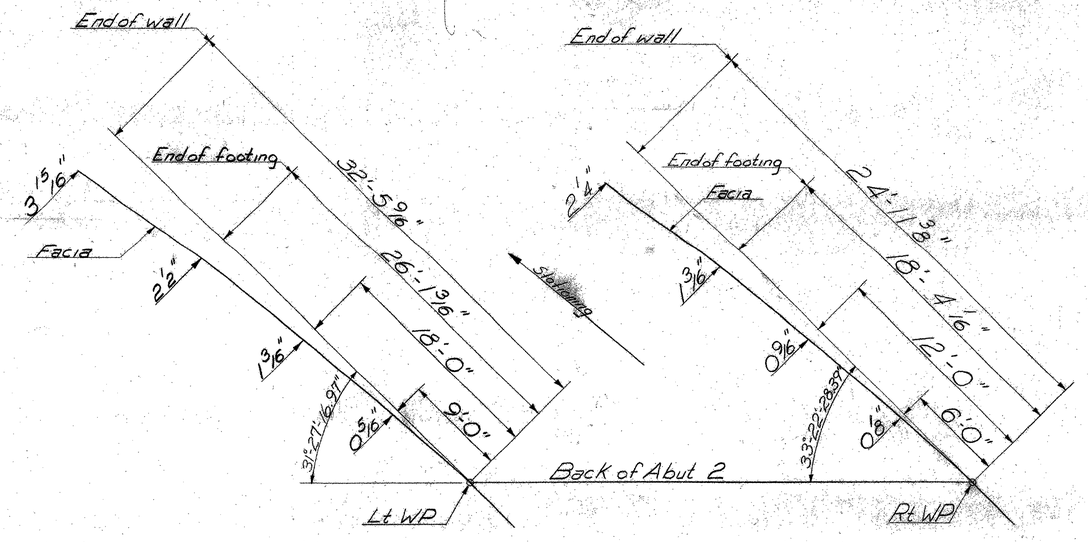
TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 LOG STA.
Details of Abut #2. Exp End
US 5 over I 91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY J.J.C.
PROJECT NO. I 91-1(22) c/2
SHEET 51 OF 220

BR 109

K+E PHOENIX N166 TRACING CLOTH B. L. M. INC. 67565



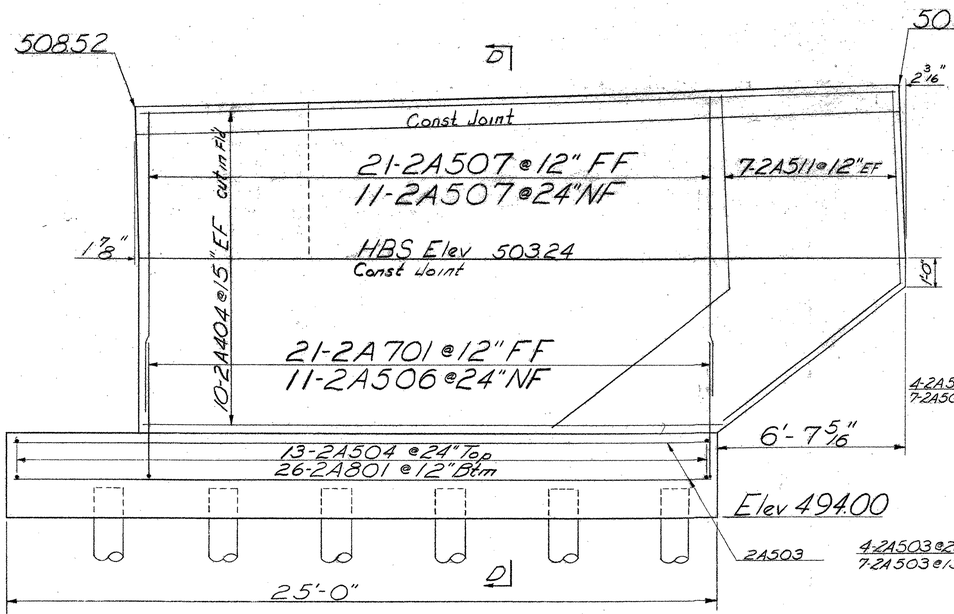
NF = Near Face
FF = Far Face
EF = Each Face
LW = Left Wall
RW = Right Wall



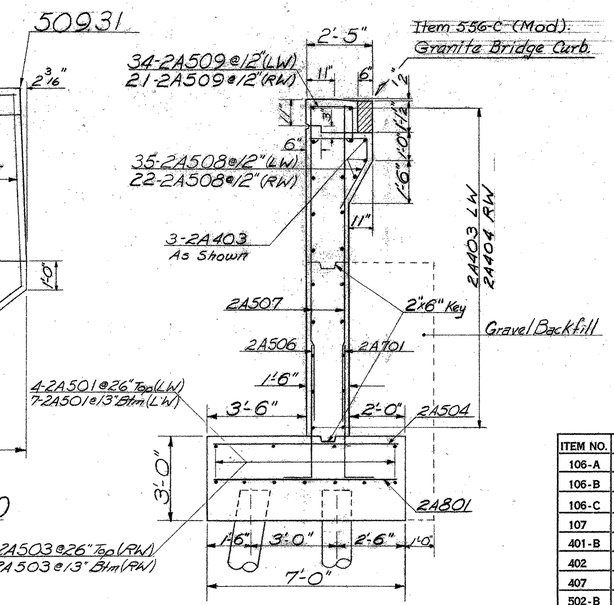
Information for laying out curved wing walls on Abut 2
NTS

NOTES

1. All reinforcing steel to have a min clear cover of 2", except 3" in the footing.
2. Top of curb to be parallel to grade.
3. Step bridge seats midway between beams as shown.
4. Estimated pile length Abut #1-45 Feet Abut #2-37 Feet
5. All piles to be driven to a 20 Ton Capacity.
6. For additional notes see sheet BR 100.
7. Batter Front Row of Piles 1 on 6.
8. For details of dead end anchorage and post attachment at wingwalls see Std. Sh. G-3a.



View C-C
Scale 3/8"=1'-0"



SECTION D-D
Scale 3/8"=1'-0"

ITEM NO.	ITEM	UNIT	NET	OVERRUN	TOTAL	FINAL
106-A	CHAN. EXCAV. OF EARTH	C. Y.				
106-B	CHAN. EXCAV. OF ROCK	C. Y.				
106-C	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.				
401-B	CONC. CLASS B (MOD.)	C. Y.				
402	REINF. STEEL	LBS.				
407	ASPHALTIC-ASB. COATING	S. Y.				
502-B	TREATED TIMBER PILING	L. F.				
503	SPLICES FOR STEEL PILING	EA.				
504	STEEL PILING	L. F.				
502-A	UNTREATED TIMBER PILING	L. F.				

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 55 OF 85

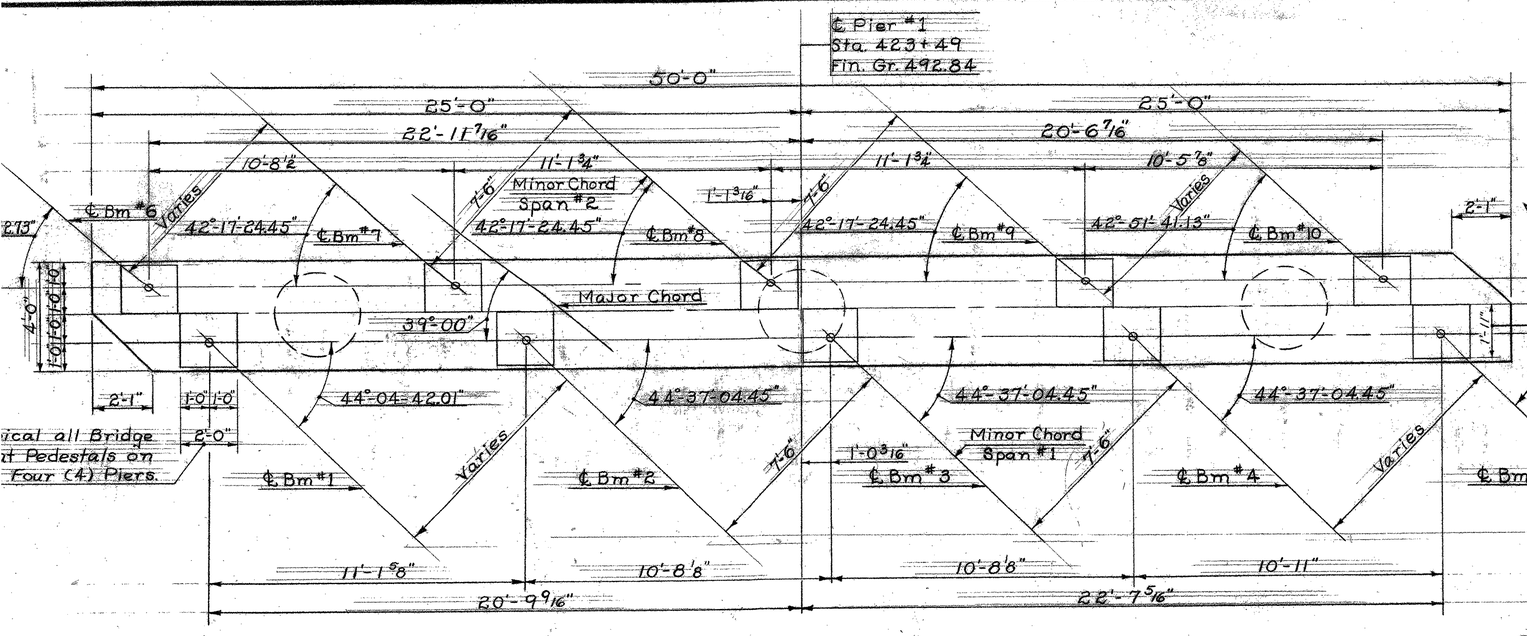
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

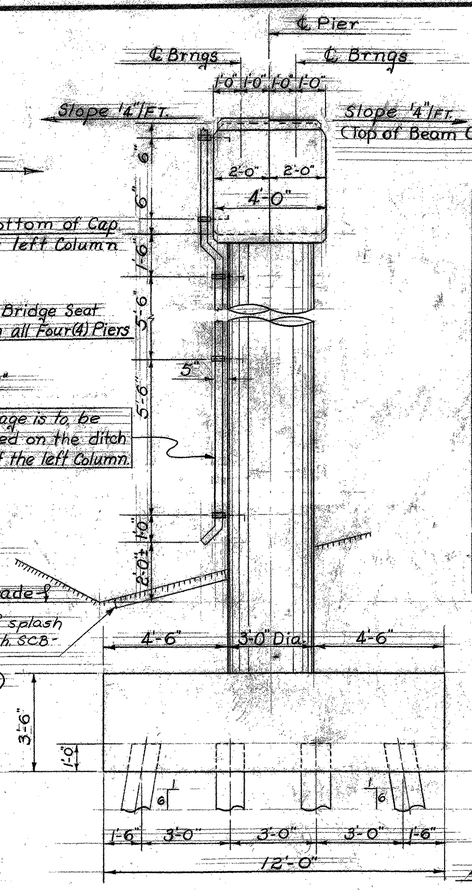
TOWN OF Hartland - Hartford
ROUTE NO. I-91 LOG STA.
Details of Abut 2 Wing Walls
US 5 over I-91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY J.J.C.
PROJECT NO. I 91-(22) c/2
SHEET 52 OF 220

R110

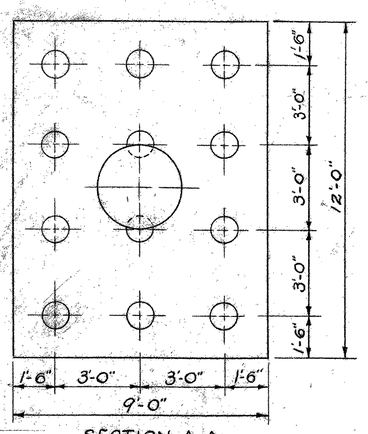
B. L. M. INC. 07585



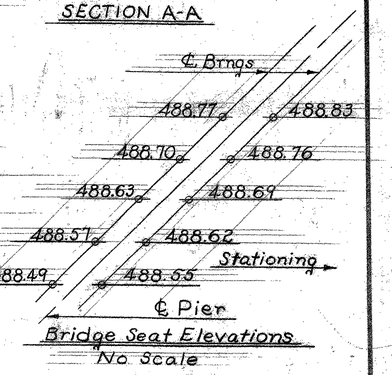
PLAN



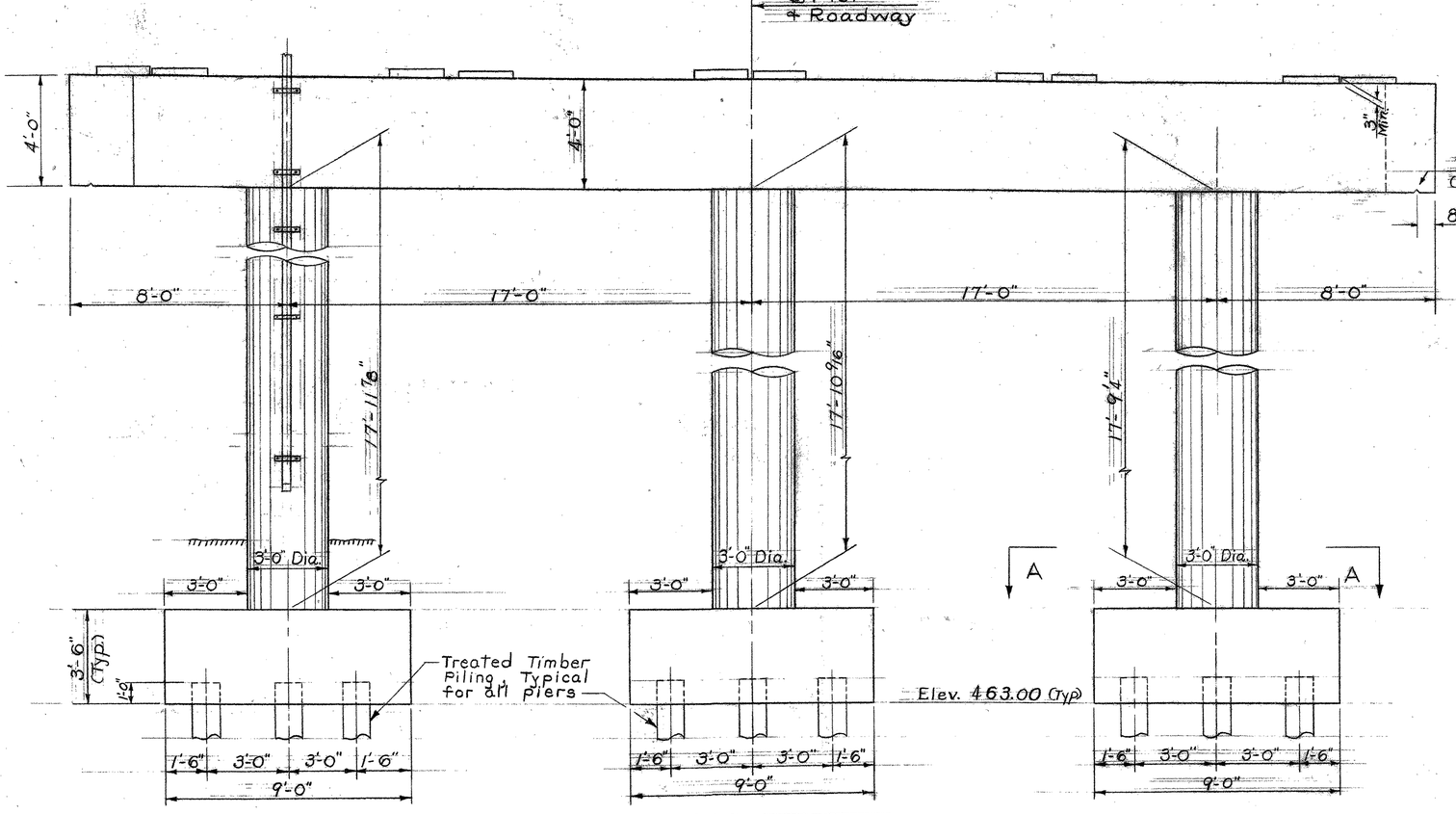
END ELEVATION



SECTION A-A



Bridge Seat Elevations
No Scale



ELEVATION

① For General Notes See Standard Drawing SCB-D1-62.

② For details of drainage not shown See Standard Drawing SCB-D3-62, Type "B", Details A, B, C & E.

③ All pier footings are designed for a maximum pile bearing pressure of 20 Tons.

④ Concrete in the footings is to be Class B (Mod). Concrete above the top of the footings is to be Class AA (Mod.).

⑤ Bridge Seat elevations given are for ℄ of bearings.

Stage I Construction.

Estimated Length of Piles 24'

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 56 OF 85

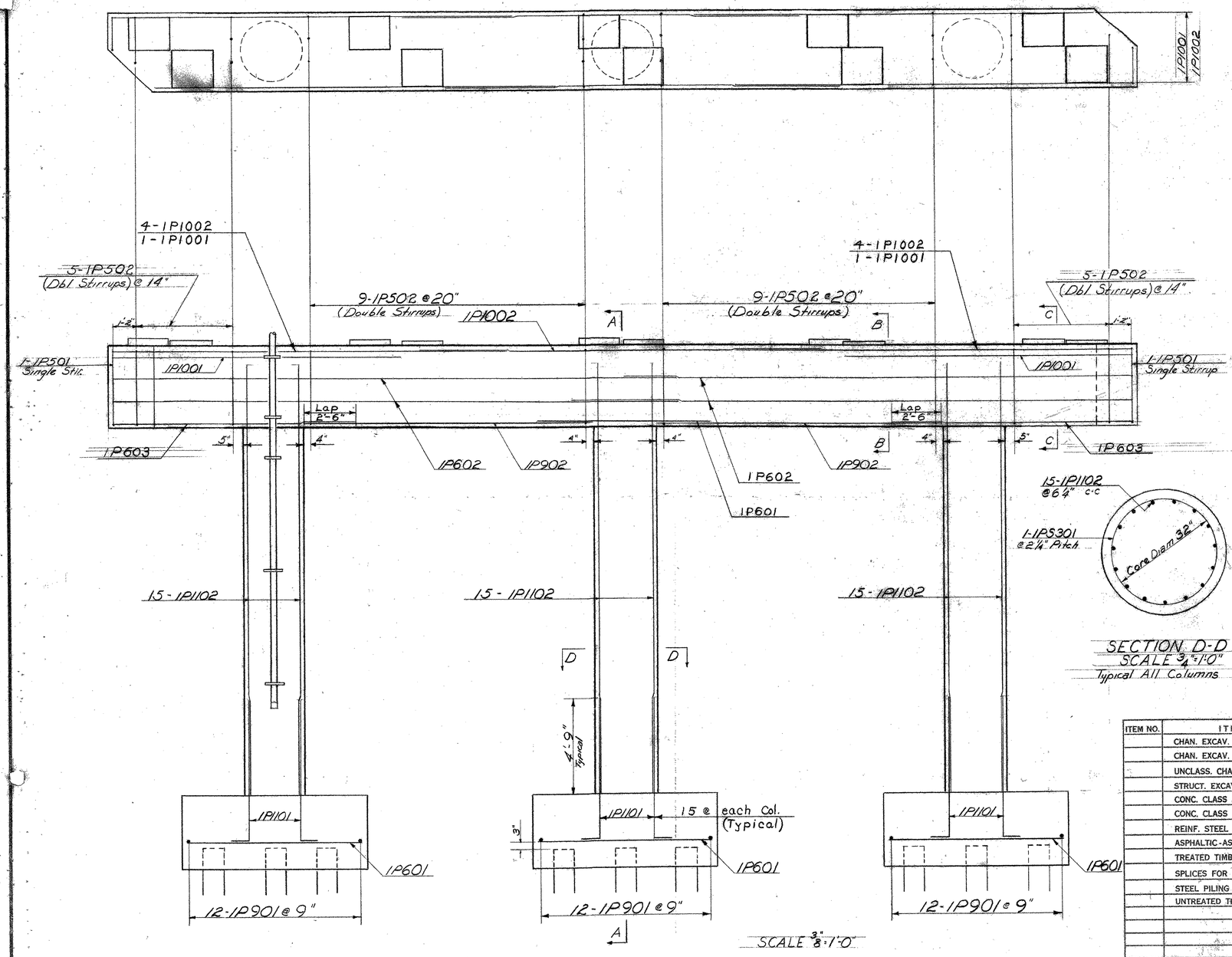
Estimated Quantities Pier No.1

Item No.	Item	Unit	Total	Final
107	Structure Excavation	C.Y.	103	103
401-AA	Concrete Class AA (Mod).	C.Y.	44	44
401-B	Concrete Class B (Mod).	C.Y.	42	42
402	Reinforcing Steel	L.B.	~~13,710~~	13926
407	Asphaltic-Asbestos Coating	S.Y.	~~23~~	22
501	Furnishing Equip. For Driving Piles (See Est. Quantity Sheet)			
502-B	Treated Timber Piling	L.F.	~~864~~	448
440	Water Repellent	Gal.	~~3~~	7½

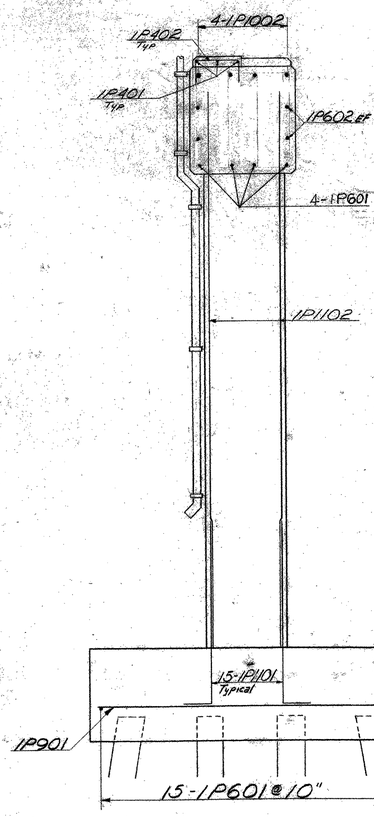
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Pier No. 1 Layout Details
U.S. 5 Over I 91
SCALE 3/8"=1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I91-1(22) Cont 2
SHEET 33 OF 220

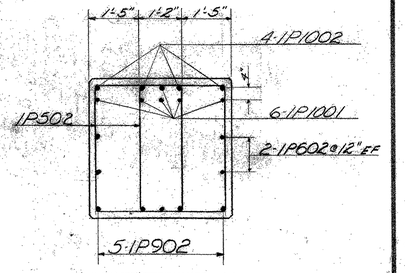
BR-III



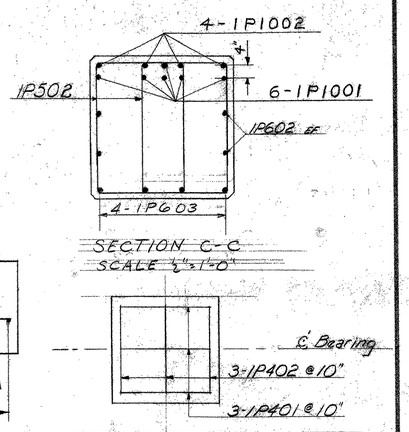
SCALE 3/8"=1'-0"



SECTION A-A
SCALE 3/8"=1'-0"



SECTION B-B
SCALE 1/2"=1'-0"



SECTION C-C
SCALE 1/2"=1'-0"

Typical Pad Reinf. Steel Layout
SCALE 3/4"=1'-0"

SECTION D-D
SCALE 3/4"=1'-0"
Typical All Columns

- NOTES -

1. Reinforcing Steel is to have a minimum clear cover of 3 inches in the footings and 2 inches in the columns, cap beam, and bearing pedestals.
2. Reinforcing steel in the top of the pier shall be placed so as to allow for drilling and placing of anchor bolts.
3. All Spiral Reinforcement shall conform to AASHO Designation M 32-60 Cold-Drawn Steel Wire for Concrete Reinforcement and shall be paid for under Item 402, Reinforcing Steel.

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 57 OF 85

Stage I Construction

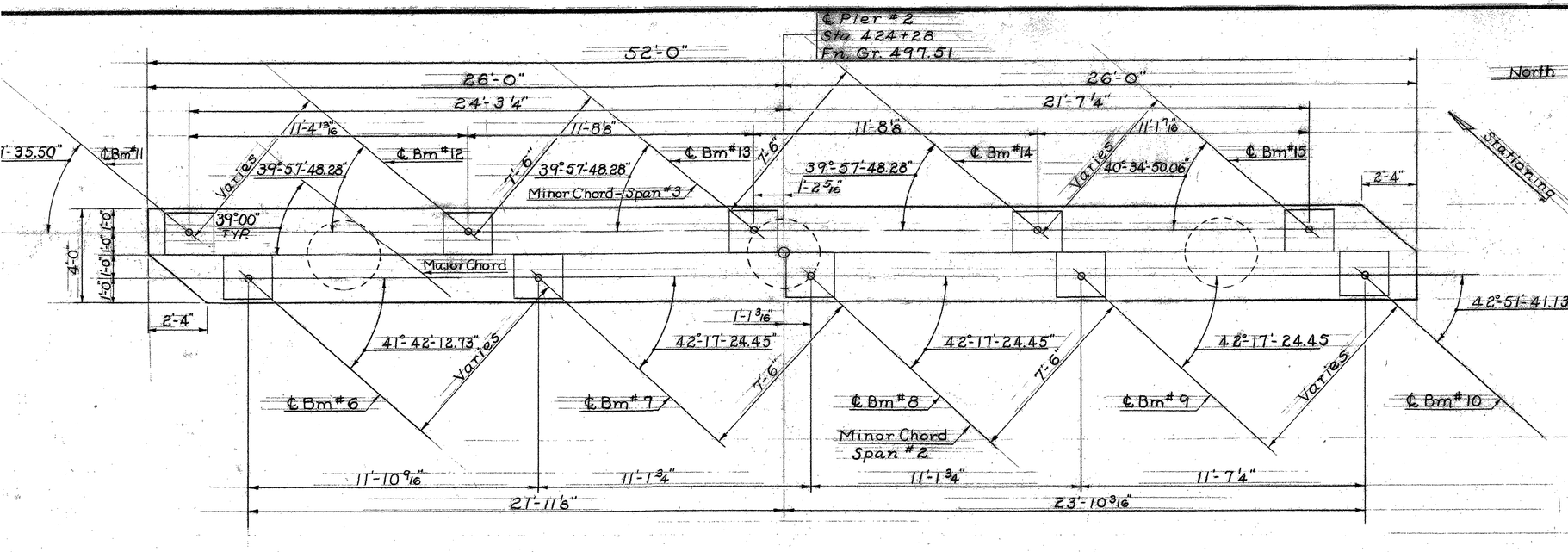
ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C. Y.				
	CHAN. EXCAV. OF ROCK	C. Y.				
	UNCLASS. CHAN. EXCAV.	C. Y.				
	STRUCT. EXCAV.	C. Y.				
	CONC. CLASS AA (MOD.)	C. Y.				
	CONC. CLASS B (MOD.)	C. Y.				
	REINF. STEEL	LBS.				
	ASPHALTIC-ASB. COATING	S. Y.				
	TREATED TIMBER PILING	L. F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L. F.				
	UNTREATED TIMBER PILING	L. F.				

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

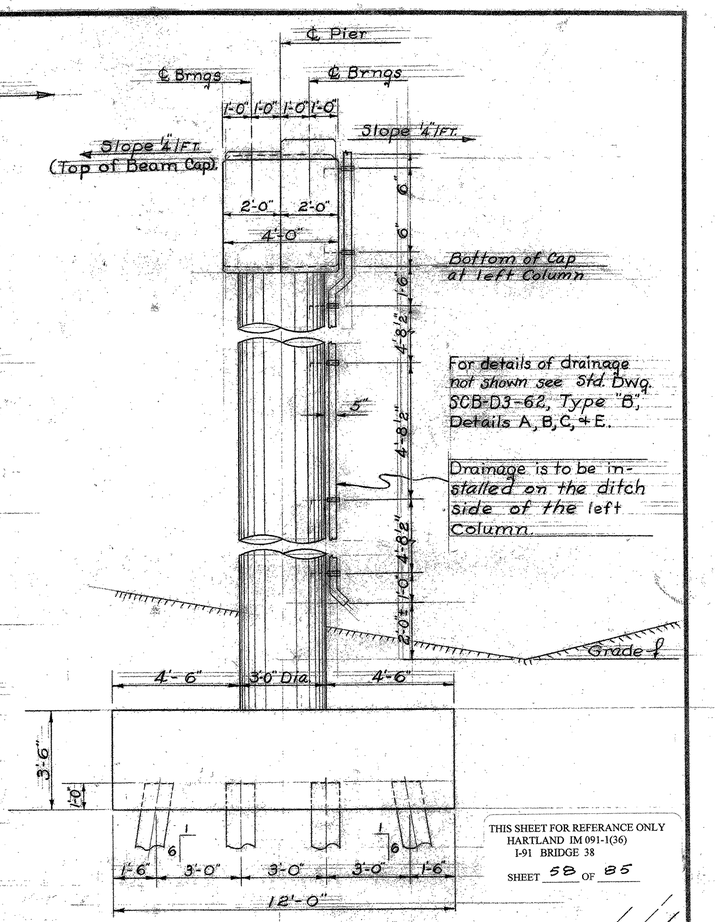
TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Pier No.1 Reinforcing Steel
US 5 over I-91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY F.W.B. 4/2/64
PROJECT NO. I 91-1(22) C/2.
SHEET 34 OF 220

BR-112

K+E PHOENIX ® 71233 TRACING CLOTH



PLAN

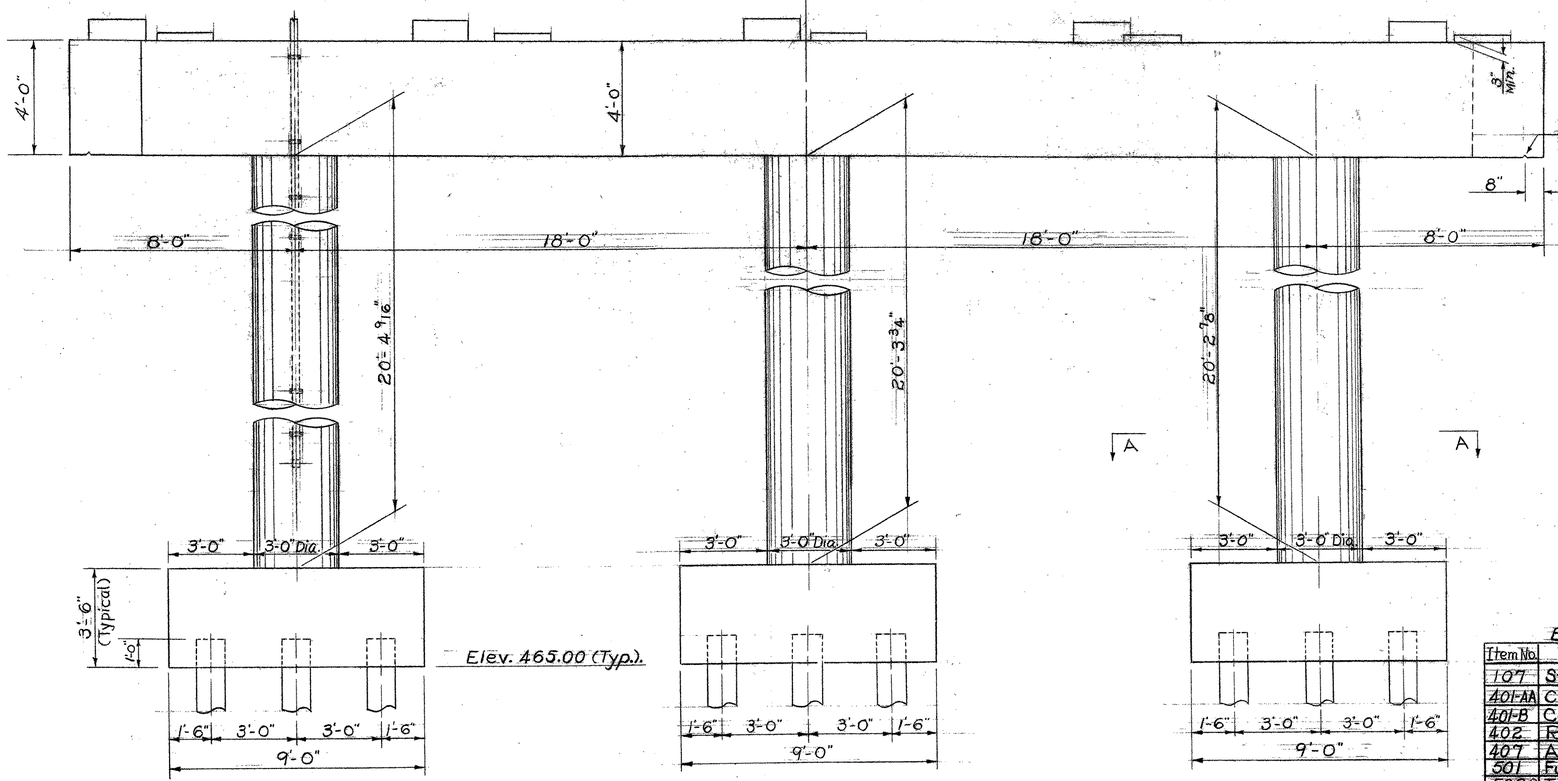


For Notes see Pier No.1 Layout Details Sheet BR-111.

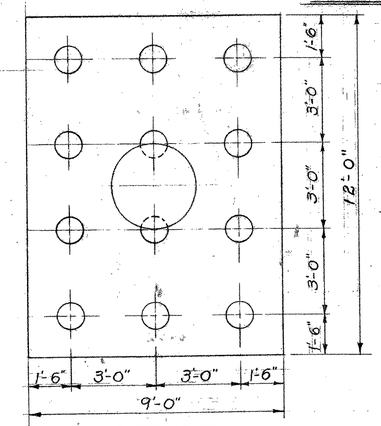
Estimated Length of Piles 20'

For details of drainage not shown see Std. Dwg. SCB-D3-62, Type "B", Details A, B, C, & E.

Drainage is to be installed on the ditch side of the left Column.

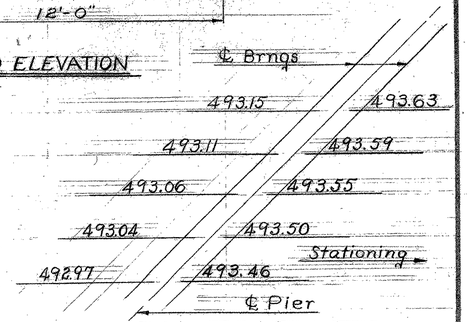


ELEVATION



SECTION A-A

END ELEVATION



Bridge Seat Elevations
No Scale

Estimated Quantities Pier No. 2

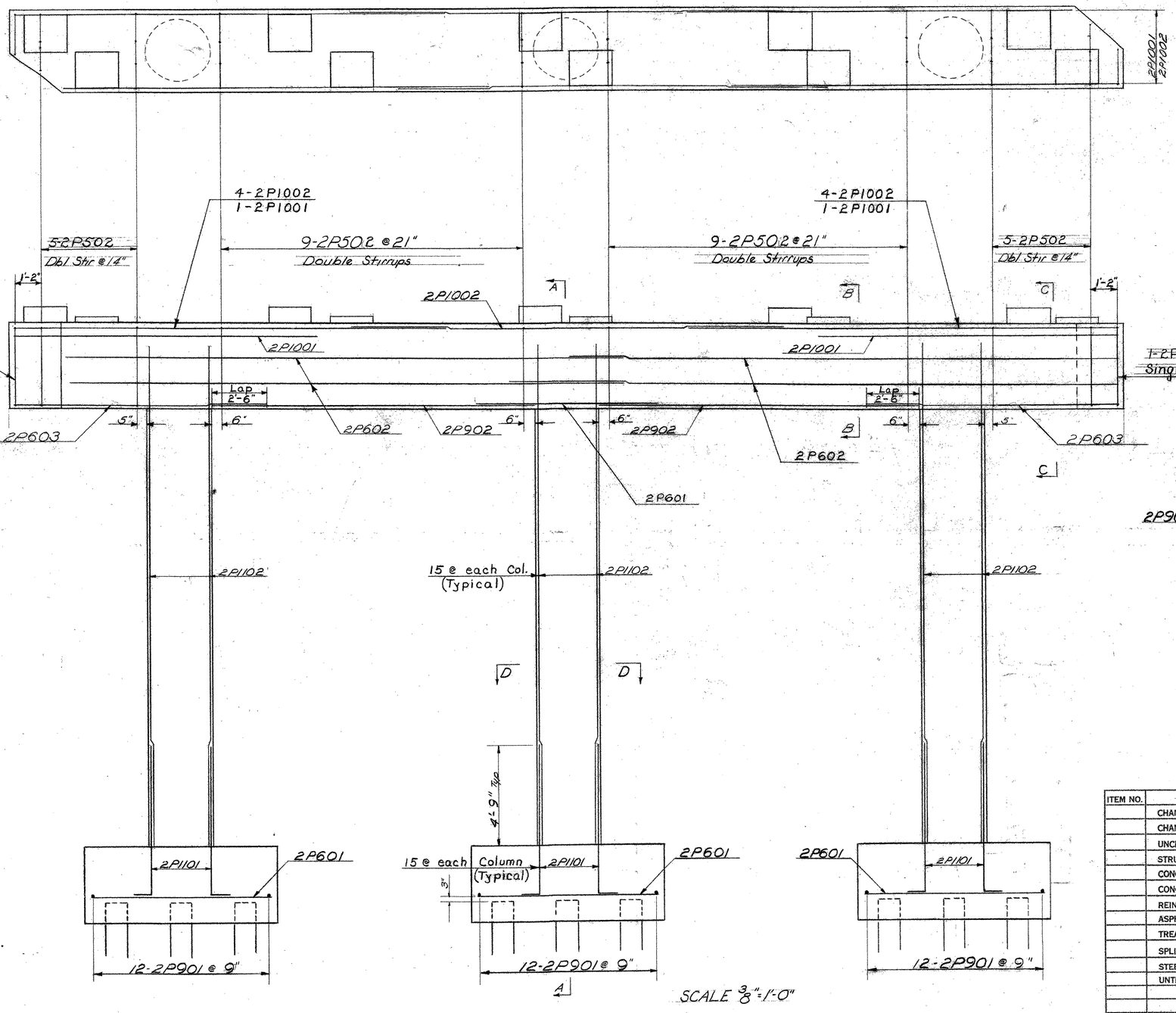
Item No.	Item	Unit	Total	Final
107	Structure Excavation	C.Y.	~~86~~	77
401-AA	Concrete Class AA (Mod.)	C.Y.	47 V	
401-B	Concrete Class B (Mod.)	C.Y.	42 V	42
402	Reinforcing Steel	LB.	~~14,490~~	14,540
407	Asphaltic-Asbestos Coating	S.Y.	~~24~~	23
501	Furnishing Equip. For Driving Piles	(See Pin Quantity Sheet).		
502.8	Treated Timber Piling	L.F.	~~720~~	269
440	Water Repellent	Gal.	~~24~~	7 3/4

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 58 OF 85

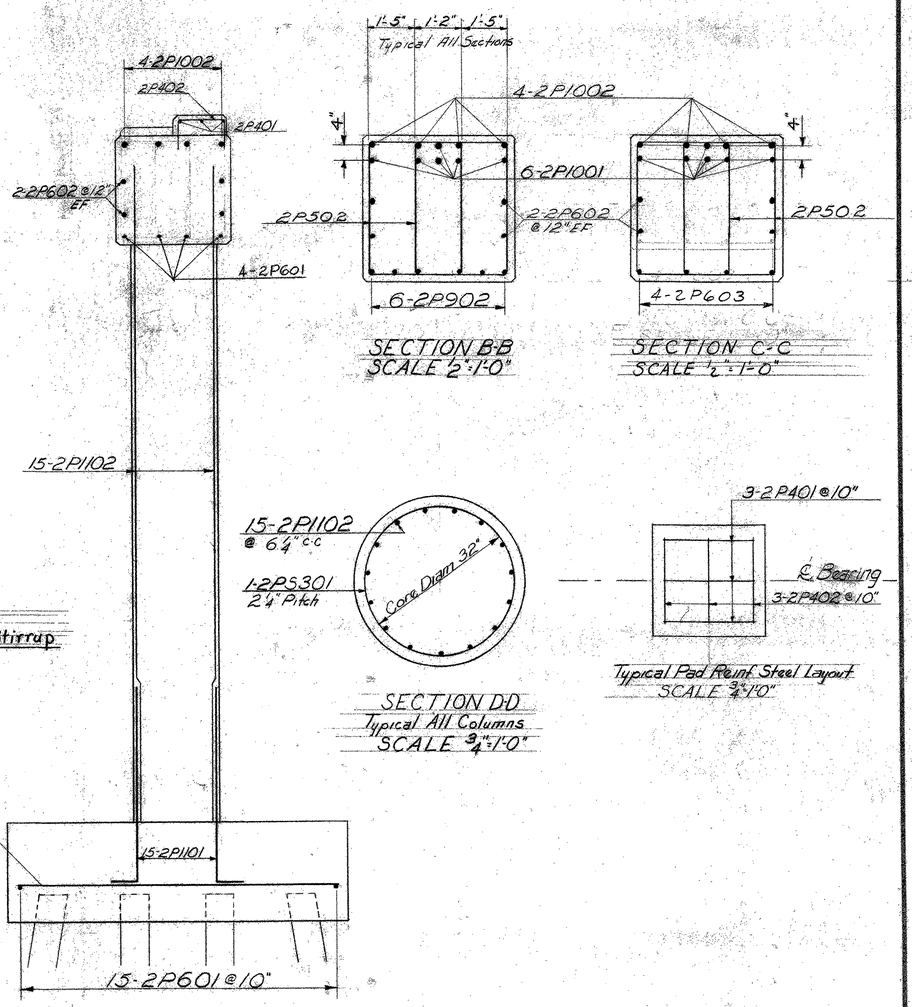
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 LOG STA.
Pier No. 2 Layout Details
U.S. 5 Over I 91
SCALE 3/8" = 1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I 91-1(22) Cont. 2
SHEET 55 OF 220

STAGE I CONSTRUCTION BR-113



SCALE $\frac{3}{8}$"=1'-0"



SECTION A-A
SCALE $\frac{3}{8}$"=1'-0"

SECTION B-B
SCALE 2"=1'-0"

SECTION C-C
SCALE $\frac{1}{2}$"=1'-0"

SECTION D-D
Typical All Columns
SCALE $\frac{3}{4}$"=1'-0"

Typical Pad Reinf. Steel Layout
SCALE 3"=1'-0"

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C. Y.				
	CHAN. EXCAV. OF ROCK	C. Y.				
	UNCLASS. CHAN. EXCAV.	C. Y.				
	STRUCT. EXCAV.	C. Y.				
	CONC. CLASS AA (MOD.)	C. Y.				
	CONC. CLASS B (MOD.)	C. Y.				
	REINF. STEEL	LBS.				
	ASPHALTIC-ASB. COATING	S. Y.				
	TREATED TIMBER PILING	L. F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L. F.				
	UNTREATED TIMBER PILING	L. F.				

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 59 OF 85

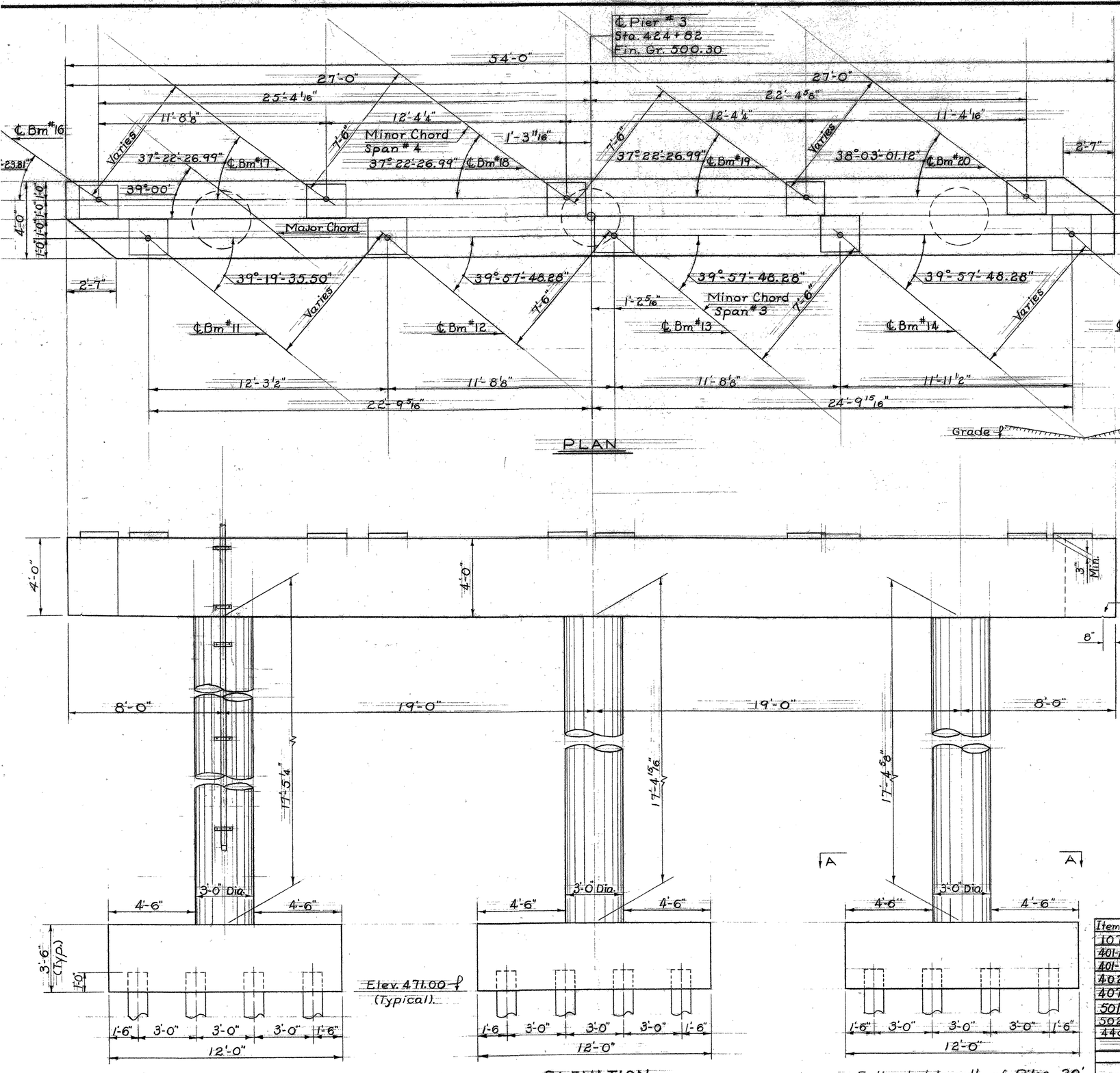
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 LOG STA.
Pier No 2 Reinforcing Steel
U.S 5 over I 91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY F.W.B. 3/30/64
PROJECT NO. I-91-1(22) C/2
SHEET 56 OF 220

BR-114

IX © 71333



THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 60 OF 85

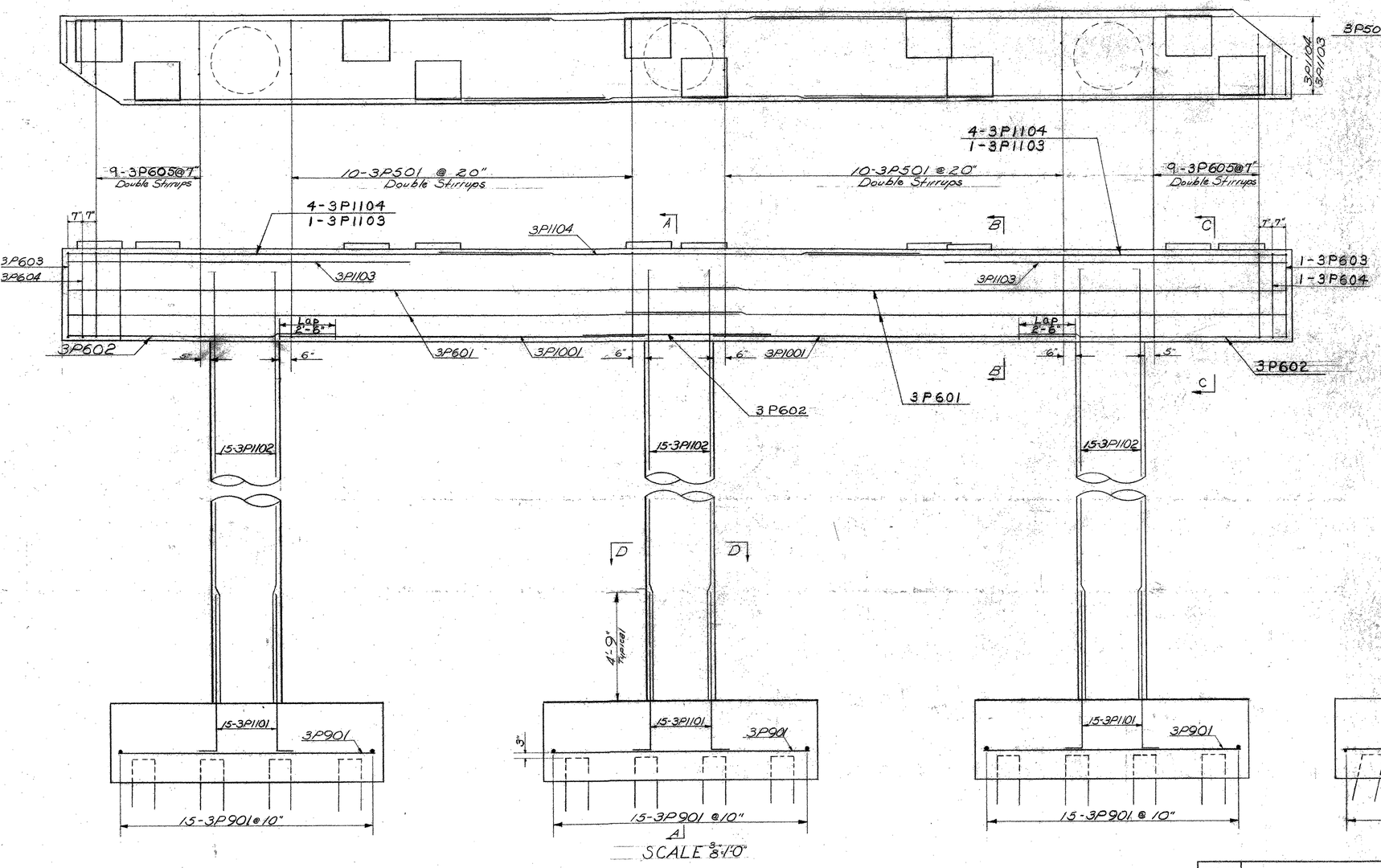
Estimated Quantities Pier No.3

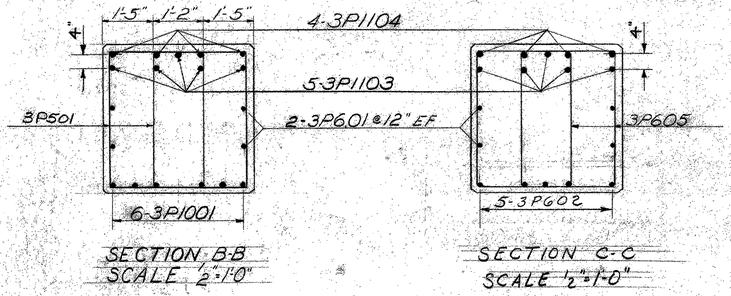
Item No.	Item	Unit	Total	Final
107	Structure Excavation	C.Y.	~~114~~	109
401-AA	Concrete Class AA (Mod.)	C.Y.	4 CY	46
401-B	Concrete Class B (Mod.)	C.Y.	56 V	56
402	Reinforcing Steel	L.B.	~~16,240~~	16,610
407	Asphaltic-Asbestos Coating	S.Y.	24 V	24
501	Furnishing Equip. For Driving Piles	(See BR. Quantity Sheet)		
502-B	Treated Timber Piling	L.F.	~~960~~	474
440	Water Repellent	Gal.	~~82~~	9
	Cut offs @ 50% Unit Price	L.F.	0	116

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Pier No.3 Layout Details
U.S. 5 Over I 91
SCALE 3/8"=1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I91-1(22)Cont.2
SHEET 57 OF 220

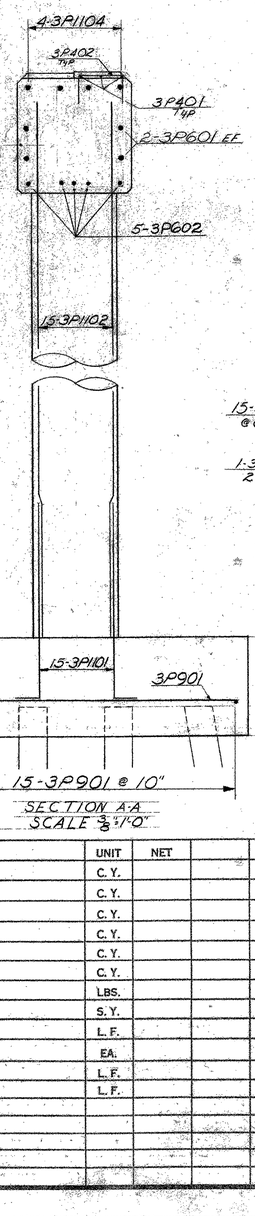
BR-115

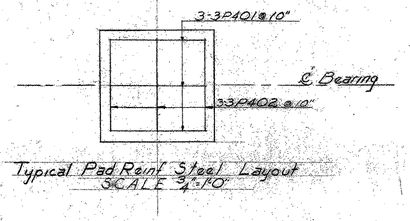




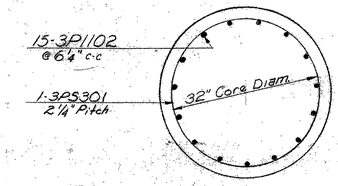
SECTION B-B
SCALE 1/2"=1'-0"

SECTION C-C
SCALE 1/2"=1'-0"





Typical Pad Reinf Steel Layout
SCALE 3/4"=1'0"



SECTION D-D
Typical for all Columns
SCALE 3/4"=1'0"

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 61 OF 85

Stage I Construction

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C. Y.				
	CHAN. EXCAV. OF ROCK	C. Y.				
	UNCLASS. CHAN. EXCAV.	C. Y.				
	STRUCT. EXCAV.	C. Y.				
	CONC. CLASS AA (MOD.)	C. Y.				
	CONC. CLASS B (MOD.)	C. Y.				
	REINF. STEEL	LBS.				
	ASPHALTIC-ASB. COATING	S. Y.				
	TREATED TIMBER PILING	L. F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L. F.				
	UNTREATED TIMBER PILING	L. F.				

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD

ROUTE NO. I 91 LOG STA.

Pier No 3 Reinforcing Steel

US 5 over I 91

SCALE As noted

SURVEYED BY

DRAWN BY AER CHECKED BY F.W.B. 3/30/64

PROJECT NO. I 91-1(22)C/2

SHEET 60 OF 220

BR-116

℄ Pier #4
Sta. 425+76
Fin. Gr. 504.37

North

Stationing

58'-0"
29'-0"
27'-5 3/8"
12'-7"
13'-4 5/8"
29'-0"
24'-0 3/8"
13'-4 5/8"
12'-1 1/2"
2'-9"
2'-9"
Major Chord
Minor Chord Span #5
Minor Chord Span # 4
Varies
34°-05'-00.02"
℄ Bm #22
39°-00"
1'-5 3/4"
34°-05'-00.02"
℄ Bm #23
34°-05'-00.02"
℄ Bm #24
34°-50'-48.26"
℄ Bm #25
36°-40'-23.81"
℄ Bm #16
37°-22'-26.99"
℄ Bm #17
1'-3 11/16"
37°-22'-26.99"
℄ Bm #18
37°-22'-26.99"
℄ Bm #19
38°-03'-01.12"
℄ Bm #20
7'-6"
13'-6 3/8"
24'-6 15/16"
12'-4 1/4"
12'-4 1/4"
13'-0 15/16"
26'-8 7/8"
1'-0"
1'-0"
1'-0"
1'-0"
4'-0"

PLAN

℄ Pier
℄ Brngs
℄ Brngs
1'-0" 1'-0" 1'-0" 1'-0"
Slope 1/4" Ft. (Top of Beam Cap)
Slope 1/2" Ft.
2'-0" 2'-0"
4'-0"
6" 6" 1'-6"
4'-10"
4'-10"
2'-0"
5"
Bottom of Cap at left Column
Drainage is to be installed on the ditch side of the left Column.
Grade
4'-6" 3'-0" Dia. 4'-6"
3'-6"
1'-0"
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"
Elev. 471.00

END ELEVATION

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 62 OF 85

For Notes see Pier No.1 Layout Details Sheet BR-111

For Estimated Quantities See Pier No.4 Reinforcing Steel, Sheet BR-118

℄ Brngs.
499.90 500.15
499.94 500.19
499.97 500.23
500.03 500.26
500.02 500.29
Stationing
℄ Pier

Bridge Seat Elevations
No Scale

3" Min.
4'-0"
8'-0"
21'-0"
21'-0"
8'-0"
8"
3/4" Drip Bead (Typ. each end)
21'-1 15/16"
21'-2 1/2"
21'-3 3/8"
3'-0" Dia.
3'-0" Dia.
3'-0" Dia.
4'-6" 4'-6"
4'-6" 4'-6"
4'-6" 4'-6"
1'-0" (Typ)
Elev. 471.00 (Typical)
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"

ELEVATION

Estimated Length of Piles 20'

A
A
1'-6"
3'-0"
3'-0"
3'-0"
1'-6"
12'-0"

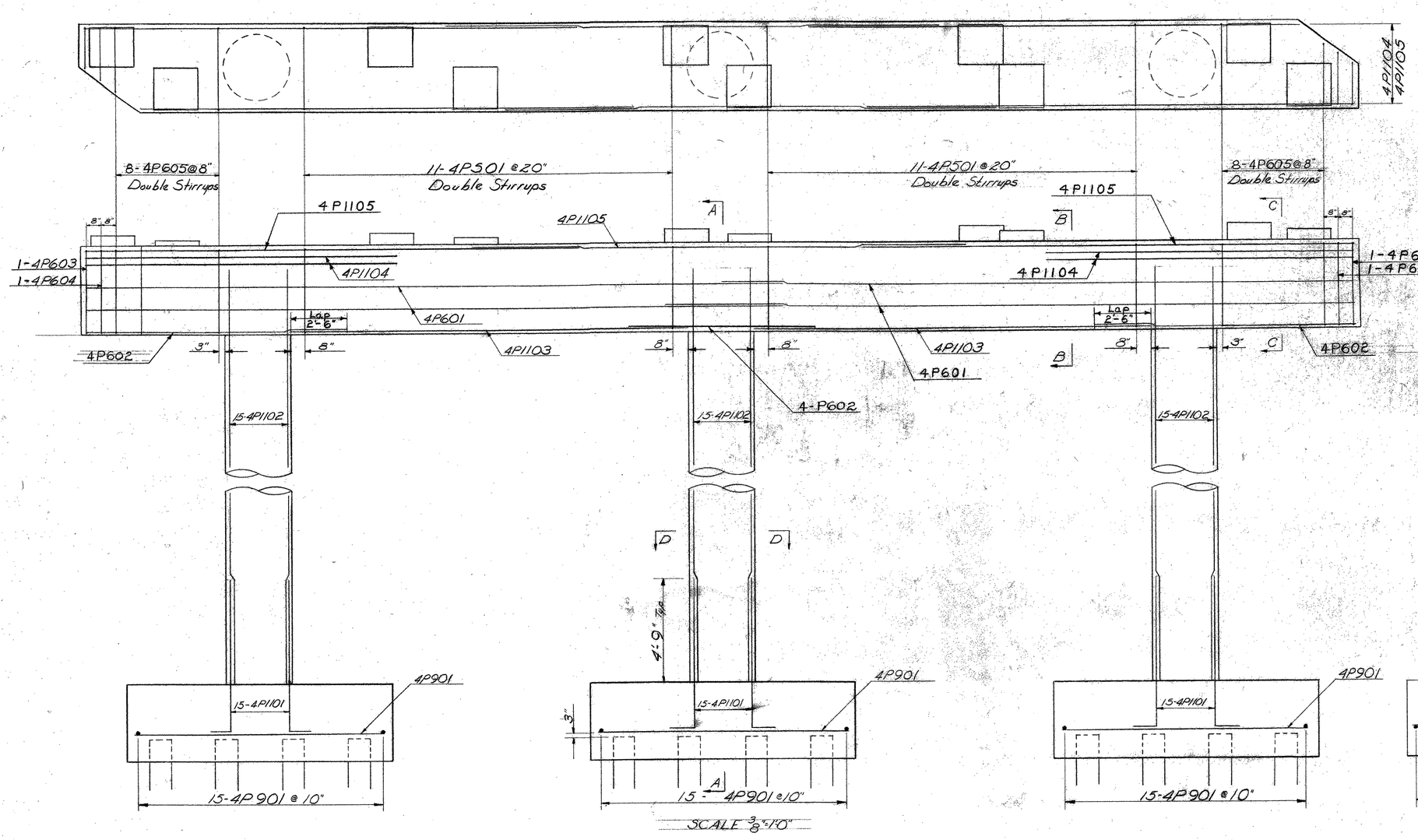
SECTION A-A

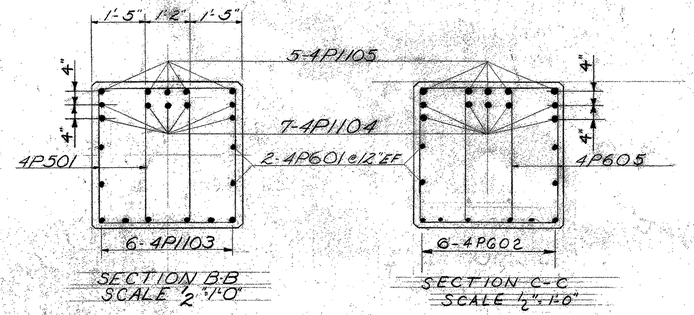
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

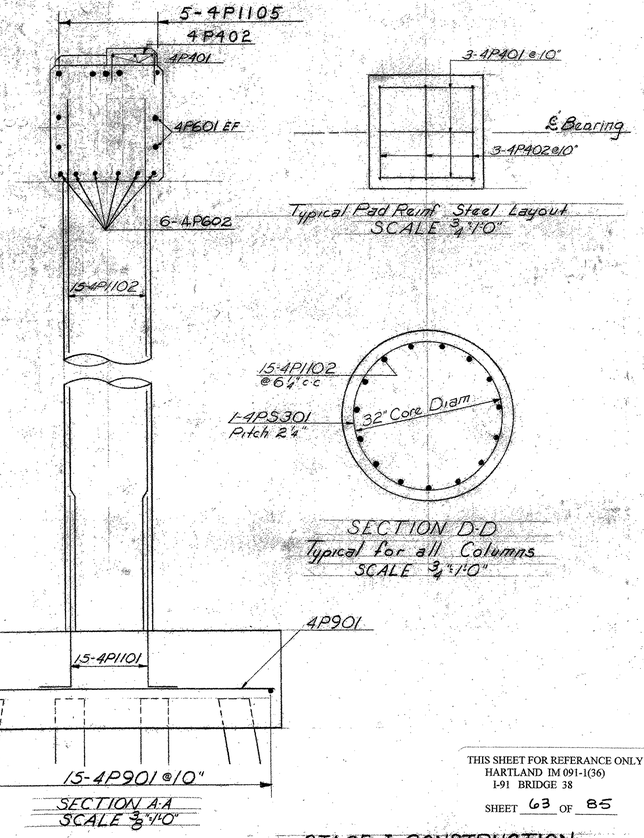
TOWN OF HARTLAND-HARTFORD
ROAD NO. I91 BRIDGE NO.
Pier No.4 Layout Details
U.S. 5 Over I 91
SCALE 3/8"=1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I91-1(22)Cont.2
SHEET 61 OF 220

Stage I Construction

BR-117







THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 63 OF 85

STAGE I CONSTRUCTION

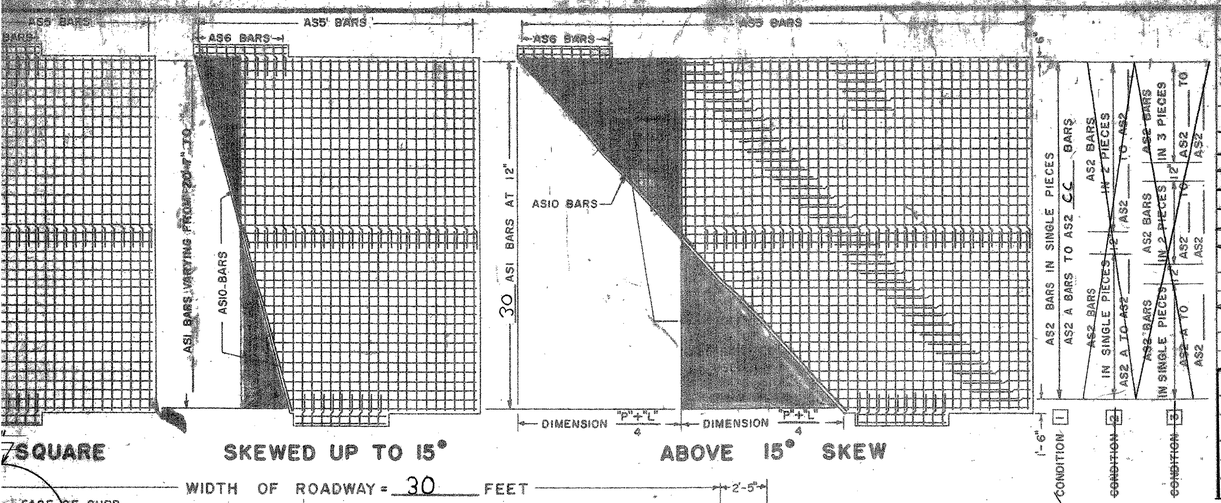
Estimated Quantities Pier #4

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C. Y.				
	CHAN. EXCAV. OF ROCK	C. Y.				
	UNCLASS. CHAN. EXCAV.	C. Y.				
107	STRUCT. EXCAV.	C. Y.	~~109~~			131
401-AA	CONC. CLASS AA (MOD.)	C. Y.	~~52~~			51
401-B	CONC. CLASS B (MOD.)	C. Y.	56 V			56
402	REINF. STEEL	LBS.	~~18400~~			18574
407	ASPHALTIC-ASB. COATING	S. Y.	26 V			26
502-B	TREATED TIMBER PILING	L. F.	~~960~~			461
	~~SPLICES FOR STEEL PILING~~ Cut-offs@50%	~~EE~~	0			464
	STEEL PILING	L. F.				
	UNTREATED TIMBER PILING	L. F.				
501	Furnishing Equipment For Driving Piles	L.S.	(See Bridge Quantity sheet)			
440	Water Repellant	Gal.	~~94~~			81/2

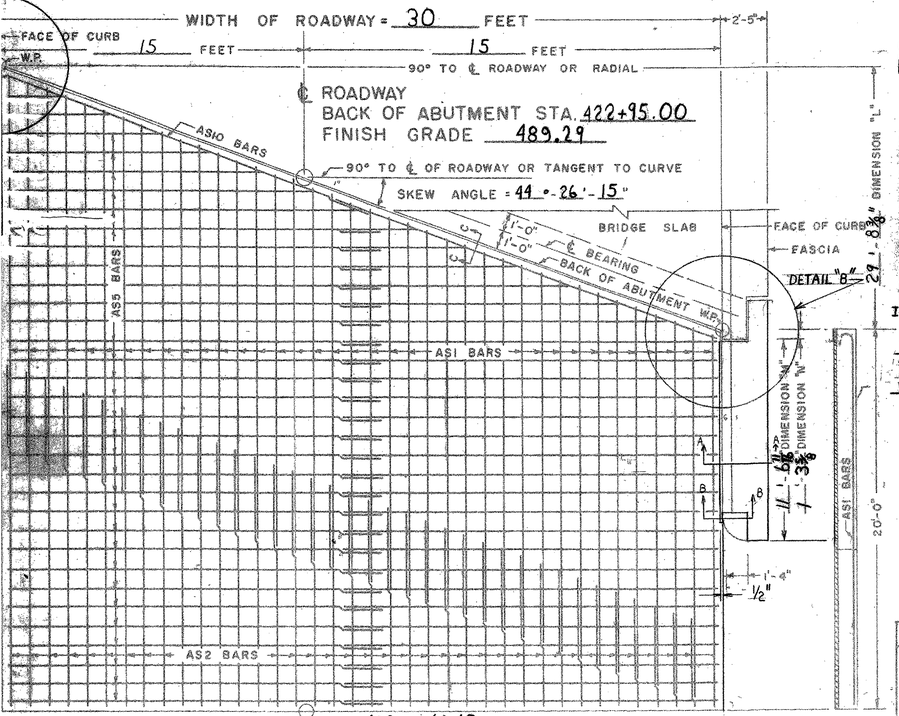
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I-91 LOG STA.
Pier No 4 Reinforcing Steel
US 5 over I 91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY FWB 3/30/64
PROJECT NO. I 91-1(22) c/2
SHEET 62 OF 220

BR-118



SQUARE SKEWED UP TO 15° ABOVE 15° SKEW

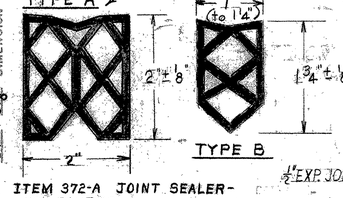


PLAN VIEW

END SECTION VIEW

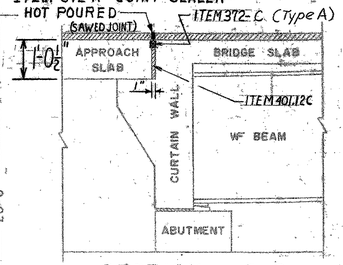
(See note G on Sheet BR-107)

ITEM 372-C JOINT SEALER - PREFORMED



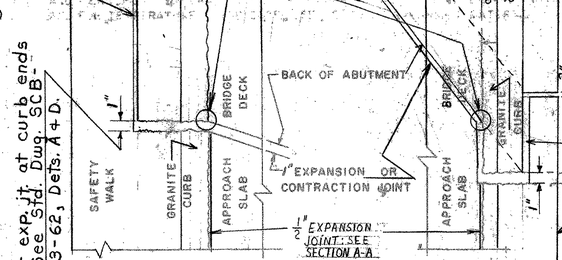
ITEM 372-A JOINT SEALER - HOT POURED (SAWED JOINT)

ITEM 372-C (Type A)

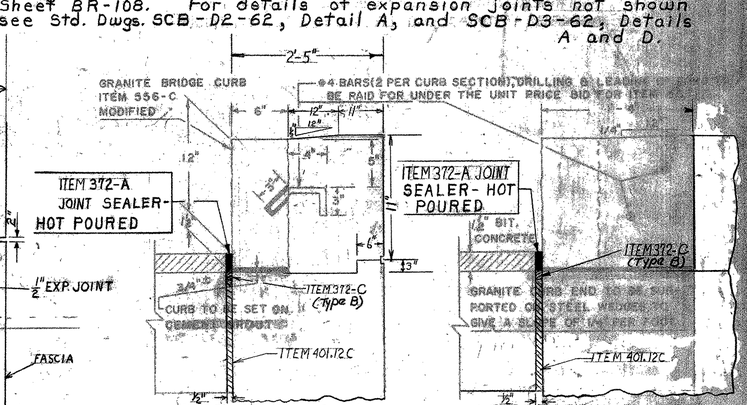


SECTION C-C NOT TO SCALE

For exp. jt. at curb ends See Std. Dwg. SCB-D3-62, Dets. A+D.



CURB ENDS & JOINT DETAIL "A" NOT TO SCALE DETAIL "B"



SECTION A-A NOT TO SCALE

SECTION B-B NOT TO SCALE

30' ROADWAY						38' ROADWAY						42' ROADWAY						44' ROADWAY						ROADWAY					
NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED						SQUARE OR SKEWED						SQUARE OR SKEWED						SQUARE OR SKEWED						SQUARE OR SKEWED					
2	10		AS3	STR.		2	10		AS3	STR.		2	10		AS3	STR.		2	10		AS3	STR.					AS3	STR.	
2	10		AS4	STR.		2	10		AS4	STR.		2	10		AS4	STR.		2	10		AS4	STR.					AS4	STR.	
5	3'-6"		AS6	STR.		5	3'-6"		AS6	STR.		5	3'-6"		AS6	STR.		5	3'-6"		AS6	STR.		5	3'-6"		AS6	STR.	
5	5'-0"		AS7	S6		5	5'-0"		AS7	S6		5	5'-0"		AS7	S6		5	5'-0"		AS7	S6		5	5'-0"		AS7	S6	
2	5		AS8	STR.		2	5		AS8	STR.		2	5		AS8	STR.		2	5		AS8	STR.		2	5		AS8	STR.	
2	5		AS9	STR.		2	5		AS9	STR.		2	5		AS9	STR.		2	5		AS9	STR.		2	5		AS9	STR.	
SQUARE						SQUARE						SQUARE						SQUARE						SQUARE					
30	10	20'-7"	AS1	1		38	10	20'-7"	AS1	1		42	10	20'-7"	AS1	1		44	10	20'-7"	AS1	1		10	20'-7"		AS1	1	
20	5	29'-6"	AS5	STR.		40	5	19'-9"	AS5	STR.		40	5	21'-9"	AS5	STR.		40	5	22'-9"	AS5	STR.		5			AS5	STR.	
SKEWED UP TO 15°						SKEWED UP TO 15°						SKEWED UP TO 15°						SKEWED UP TO 15°						SKEWED UP TO 15°					
30	10	AVE.	AS1	1	1.	38	10	AVE.	AS1	1	1.	42	10	AVE.	AS1	1	1.	44	10	AVE.	AS1	1	1.	10	AVE.		AS1	1	1.
5	29'-6"		AS5	STR.	2.	5		19'-9"	AS5	STR.	3.	5		21'-9"	AS5	STR.	3.	5		22'-9"	AS5	STR.	3.	5			AS5	STR.	3.
ALL SKEWED SPANS						ALL SKEWED SPANS						ALL SKEWED SPANS						ALL SKEWED SPANS						ALL SKEWED SPANS					
2	5	21'-9"	ASIO	STR.		5			ASIO	STR.		5			ASIO	STR.		5			ASIO	STR.		5			ASIO	STR.	
ABOVE 15° SKEW						ABOVE 15° SKEW						ABOVE 15° SKEW						ABOVE 15° SKEW						ABOVE 15° SKEW					
30	10	20'-7"	AS1	1		38	10	20'-7"	AS1	1		42	10	20'-7"	AS1	1		44	10	20'-7"	AS1	1		10	20'-7"		AS1	1	
29	10	19'-1/2" AVE.	AS2	STR.	4.	37	10	AVE.	AS2	STR.	4.	41	10	AVE.	AS2	STR.	4.	43	10	AVE.	AS2	STR.	4.	10	AVE.		AS2	STR.	4.
35	5	29'-6"	AS5	STR.	2.	5		19'-9"	AS5	STR.	3.	5		21'-9"	AS5	STR.	3.	5		22'-9"	AS5	STR.	3.	5			AS5	STR.	3.

REMARKS: (1) AS1 BAR "B" DIMENSION VARIES FROM 19'-6" TO 19'-6". (2) 20 + DIMENSION ("P"+"L") ÷ 4 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. (3) 40 + DIMENSION ("P"+"L") ÷ 2 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. (4) THE LENGTH OF AS2 BARS VARIES FROM 5'-8" TO 32'-5". THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1. (FOR CONDITION 2. & 3. SEE REINF. SCHEDULE.)

GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETAILED. SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS, AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1953. DESIGNED FOR H-20 LOADING.

* DENOTES EXTRA BAR FOR TESTING PURPOSES

For layout details of curb not shown see Details of Abut. #1, Sheet BR-108. For details of expansion joints not shown see Std. Dwgs. SCB-D2-62, Detail A, and SCB-D3-62, Details A and D.

DETAILS OF REINFORCING BARS

TYPE I: A = 1'-1" J = 0'-9" B = 19'-6" OR VARIES

TYPE S6 C: A = 0'-6" B = 1'-9" C = 0'-6" D = 1'-9" G = 0'-6"

ITEM NO.	ITEM	UNIT			TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	47			
361-8	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TONS	10			
401-8	CONCRETE CLASS B (MOD.)	C.Y.	40 V			40
402	REINFORCING STEEL	LB.	~~6230~~			6205
556-C	GRANITE BRIDGE CURB (MOD.)	L.F.	(See Sheet BR-108)			

REINFORCING STEEL

BAR NO.	A NO. PIECES	B LENGTH	C WEIGHT PER FT.	A x B x C WEIGHT IN LBS.
AS1	30	20'-7"	4.303	2657.
* AS2	30	18'-9 3/4"	4.303	2428.1
AS3	~~2~~		4.303	—
AS4	~~2~~	—	4.303	—
AS5	35	29'-6"	1.043	1076.9
AS6	—	~~3'-6"~~	1.043	—
AS7	—	~~5'-0"~~	1.043	—
AS8	~~2~~	—	1.043	—
AS9	~~2~~	—	1.043	—
AS10	3	21'-9"	1.043	68.
TOTAL WEIGHT = CALL				6230.

QUANTITY COMPUTATION

W = WIDTH OF ROADWAY Z = 20 + DIMENSION "P"+"L" / 4 T = DIMENSION

W = 30.00 Z = 34.62 T = 10.82

BITUMINOUS CONCRETE = W x Z x 0.0092 = TONS 30.00 x 34.62 x 0.0092 = 9.55 TONS

TAR EMULSION = W x Z x 0.0444 = GALLONS 30.00 x 34.62 x 0.0444 = 46.11 GALLONS

CONCRETE CLASS B = W x Z x 0.0386 + T x 0.1029 + (T - 1.8333) x 0.0733 = CUBIC YARDS

[30.00 x 34.62 x 0.0386] + [~~10.82 x 0.1029~~] + [~~(10.82 - 1.8333) x 0.0733~~] = 40.09 CUBIC YARDS

GRANITE BRIDGE CURB = 2(T + 0'-3") = LINEAR FEET 2(~~10.82~~ + 0.25) = ~~22.14~~ LINEAR FEET

BAR LENGTHS: AS3 BARS = DIMENSION "M" - 0'-6"; AS4 BARS = DIMENSION "R" - 0'-6"; AS6 BARS = 3'-6"; AS7 BARS = 5'-0"; AS8 BARS = DIMENSION "M" - 2'-2"; AS9 BARS = DIMENSION "R" - 2'-2"

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 64 OF 85

Stage I Construction

REVISIONS AND CORRECTIONS
Joint Filler Item 323 - 6-21-63 WR

APPROVED

DRAWN BY: R.S. HAUPT NOV. 1960

TRACED BY: R.S. HAUPT NOV. 1960

CHECKED BY: A.H. SMALLEY NOV. 1960

Recommended For Approval — Bridge Engineer — Date 12/19/62

Recommended For Approval — Asst. Chief Engineer — Date

Approved By — Chief Engineer — Date

DETAILS OF APPROACH SLAB #1 FOR 30'-0" (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 3370±

LOCATION US #5 over I91

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

SB-AS-62

TOWN OF HARTLAND-HARTFORD

ROUTE NO. I91

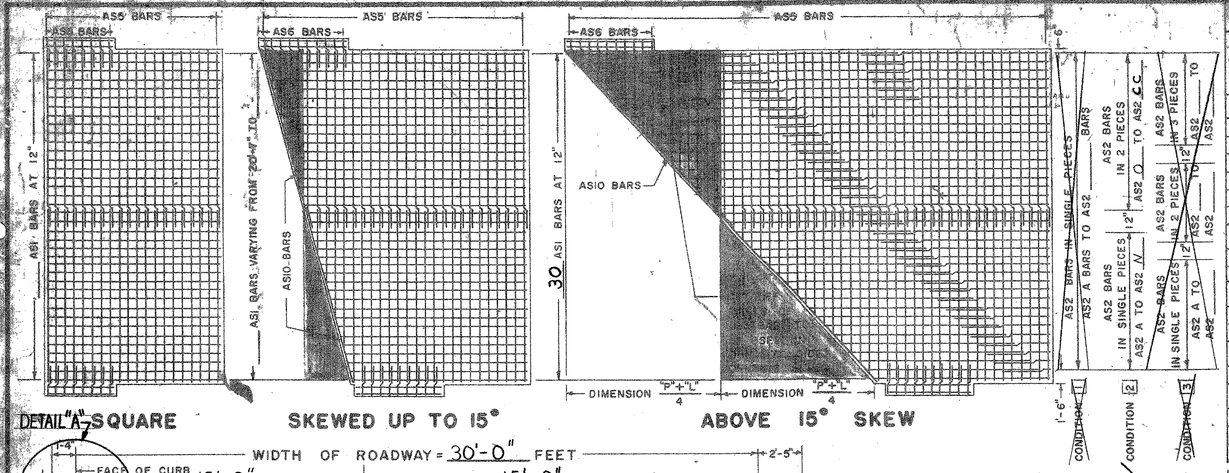
LOG STA. —

SCALE AS NOTED

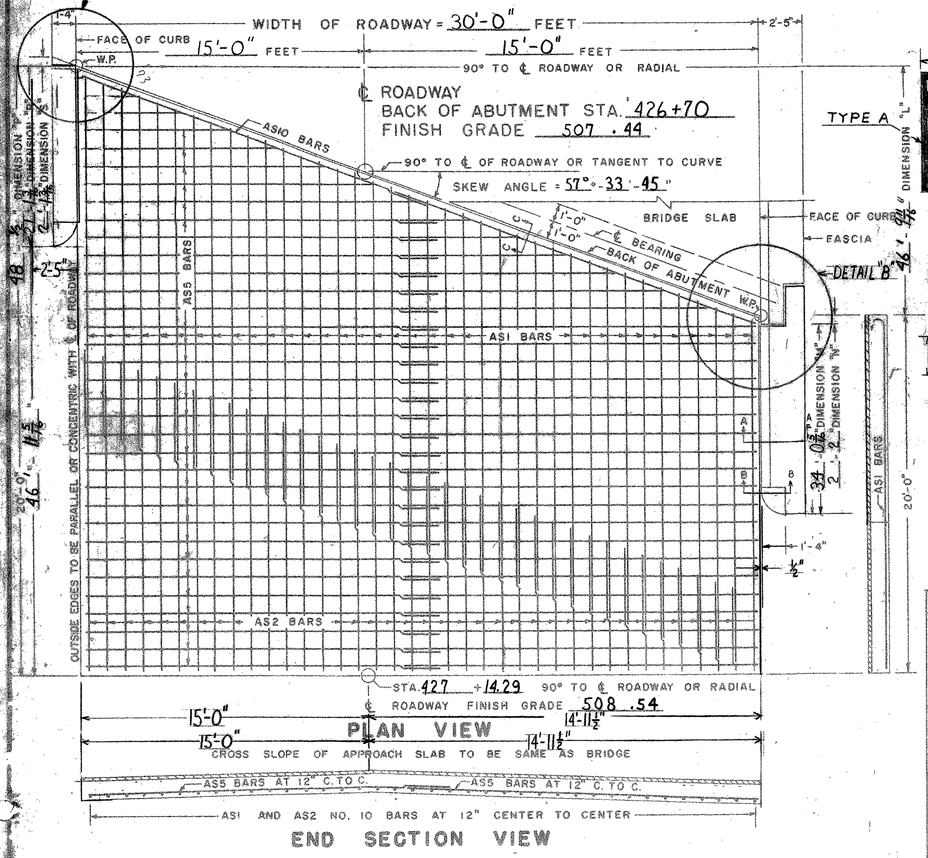
DESIGNED BY LES CHECKED BY AER

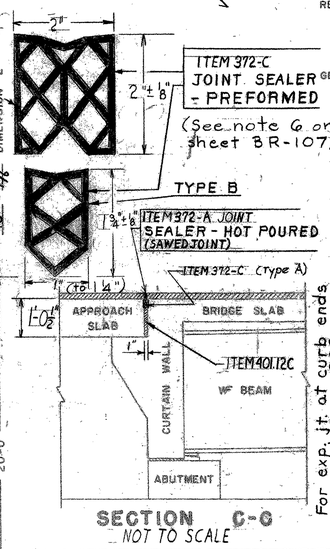
PROJECT NO. I-91-1(22)-C/2

BR. 119 OF 122 SHEET 63 220

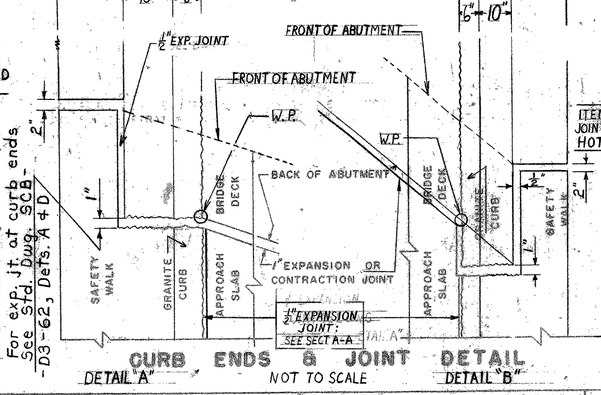


DETAIL "A" — SQUARE — SKEWED UP TO 15° — ABOVE 15° SKEW

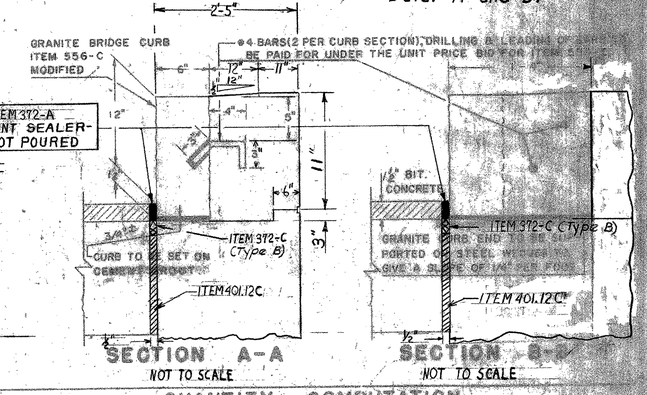




SECTION C-C
NOT TO SCALE



CURB ENDS & JOINT DETAIL
DETAIL "A" NOT TO SCALE DETAIL "B"



SECTION A-A
NOT TO SCALE

SECTION B-B
NOT TO SCALE

30' ROADWAY					38' ROADWAY					42' ROADWAY					44' ROADWAY					ROADWAY				
NO. PIECES	SIZE	LENGTH	MARK	TYPE	NO. PIECES	SIZE	LENGTH	MARK	TYPE	NO. PIECES	SIZE	LENGTH	MARK	TYPE	NO. PIECES	SIZE	LENGTH	MARK	TYPE	NO. PIECES	SIZE	LENGTH	MARK	TYPE
SQUARE OR SKEWED					SQUARE OR SKEWED					SQUARE OR SKEWED					SQUARE OR SKEWED					SQUARE OR SKEWED				
0	10		AS3	STR.	2	10		AS3	STR.	2	10		AS3	STR.	2	10		AS3	STR.	2	10		AS3	STR.
2	10		AS4	STR.	2	10		AS4	STR.	2	10		AS4	STR.	2	10		AS4	STR.	2	10		AS4	STR.
5	3'-6"		AS6	STR.	5	3'-6"		AS6	STR.	5	3'-6"		AS6	STR.	5	3'-6"		AS6	STR.	5	3'-6"		AS6	STR.
5	5'-0"		AS7	S6	5	5'-0"		AS7	S6	5	5'-0"		AS7	S6	5	5'-0"		AS7	S6	5	5'-0"		AS7	S6
5			AS8	STR.	5			AS8	STR.	5			AS8	STR.	5			AS8	STR.	5			AS8	STR.
5			AS9	STR.	5			AS9	STR.	5			AS9	STR.	5			AS9	STR.	5			AS9	STR.
SQUARE					SQUARE					SQUARE					SQUARE					SQUARE				
10	20'-7"		AS1	1	10	20'-7"		AS1	1	10	20'-7"		AS1	1	10	20'-7"		AS1	1	10	20'-7"		AS1	1
5	29'-6"		AS5	STR.	5	19'-9"		AS5	STR.	5	21'-9"		AS5	STR.	5	22'-9"		AS5	STR.	5			AS5	STR.
SKEWED UP TO 15°					SKEWED UP TO 15°					SKEWED UP TO 15°					SKEWED UP TO 15°					SKEWED UP TO 15°				
10	AVE.		AS1	1	10	AVE.		AS1	1	10	AVE.		AS1	1	10	AVE.		AS1	1	10	AVE.		AS1	1
5	29'-6"		AS5	STR. 2.	5	19'-9"		AS5	STR. 3.	5	21'-9"		AS5	STR. 3.	5	22'-9"		AS5	STR. 3.	5			AS5	STR. 3.
ALL SKEWED SPANS					ALL SKEWED SPANS					ALL SKEWED SPANS					ALL SKEWED SPANS					ALL SKEWED SPANS				
5	29'-1"		ASIO	STR.	5			ASIO	STR.	5			ASIO	STR.	5			ASIO	STR.	5			ASIO	STR.
ABOVE 15° SKEW					ABOVE 15° SKEW					ABOVE 15° SKEW					ABOVE 15° SKEW					ABOVE 15° SKEW				
10	20'-7"		AS1	1	10	20'-7"		AS1	1	10	20'-7"		AS1	1	10	20'-7"		AS1	1	10	20'-7"		AS1	1
10	AVE.		AS2	STR. 4.	10	AVE.		AS2	STR. 4.	10	AVE.		AS2	STR. 4.	10	AVE.		AS2	STR. 4.	10	AVE.		AS2	STR. 4.
5	29'-6"		AS5	STR. 2.	5	19'-9"		AS5	STR. 3.	5	21'-9"		AS5	STR. 3.	5	22'-9"		AS5	STR. 3.	5			AS5	STR. 3.

REMARKS: ① ASI BAR "B" DIMENSION VARIES FROM 19'-6" TO 19'-6". ② 20 + DIMENSION ("P"+"L") ÷ 4 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. ③ 40 + DIMENSION ("P"+"L") ÷ 2 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. ④ THE LENGTH OF AS2 BARS VARIES FROM — TO —. THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1. (FOR CONDITION 2. & 3. SEE REINF. SCHEDULE) ⑤ CONDITION 2 PREVAILS; HENCE 14 SINGLE BARS AVE. LENGTH = 16'-1½" AND 15 AS2 BARS IN TWO PIECES AVE. LENGTH = 43'-1" ARE USED)

GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETAILED. SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1953 DESIGNED FOR HS 20 LOADING.

For layout details of curb not shown see Details of Abut. "2, Sheet BR-109. For details of expansion joints not shown see Std. Dwgs. SCB-D2-62, Det. A, and SCB-D3-62, Defs. A and D.

DETAILS OF REINFORCING BARS

TYPE I: A = 1'-1" J = 0'-9"; B = 19'-6" OR VARIES

TYPE S6: A = 0'-6"; B = 1'-9"; C = 0'-6"; D = 1'-9"; G = 0'-6"

ITEM NO.	ITEM	UNIT			TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	59			
361-B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TONS	12			
401-B	CONCRETE CLASS B (MOD.)	CY.	51 ✓			51
402	REINFORCING STEEL	LB.	~~7830~~			7825
556-C	GRANITE BRIDGE CURB (MOD.)	LF.	(See Sheet BR-109)			

REINFORCING STEEL

BAR NO.	A NO. PIECES	B LENGTH	C WEIGHT PER FT.	A×B×C WEIGHT IN LBS.
AS1	30	20'-7"	4.303	2657.10
AS2	29	14@16'-2" & 15@43'-1"	4.303	3754.3
AS3	2	——	4.303	——
AS4	2	——	4.303	——
AS5	44	29'-6"	1.043	1353.81
AS6	—	3'-6"	1.043	——
AS7	—	5'-0"	1.043	——
AS8	2	——	1.043	——
AS9	2	——	1.043	——
ASIO	2	29'-1"	1.043	66.67

TOTAL WEIGHT = 7830. CALL

QUANTITY COMPUTATION

W = WIDTH OF ROADWAY Z = 20 + DIMENSION "P"+"L" / 4 T = DIMENSION "P"+"L" / 4

W = 30.00 Z = 43.71 T = 27.54

BITUMINOUS CONCRETE = W×Z×0.0028 = TONS 30.00 × 43.71 × 0.0028 = 12.064

TAR EMULSION = W×Z×0.0444 = GALLONS 30.00 × 43.71 × 0.0444 = 58.22

CONCRETE CLASS B = W×Z×0.0386 + T×0.1029 + T²×0.00533 + 0.0723 = CUBIC YARDS

[30.00 × 43.71 × 0.0386] + [× 0.1029] + [× 0.00533 × 0.0723] = 50.616 CUBIC YARDS

GRANITE BRIDGE CURB = 2(T + 0'-3") = LINEAR FEET 2(+ 0.25). = LINEAR FEET

BAR LENGTHS: AS3 BARS = DIMENSION "M" – 0'-6"; AS4 BARS = DIMENSION "R" – 0'-6"; AS6 BARS = 3'-6"; AS7 BARS = 5'-0"; AS8 BARS = DIMENSION "M" – 2'-2"; AS9 BARS = DIMENSION "R" – 2'-2"

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 65 OF 85

Stage I Construction

REVISIONS AND CORRECTIONS
Revised Joint Filler Item 373 – 6-21-63 W

APPROVED

DRAWN BY: R.S.HAUPT NOV. 1960

TRACED BY: R.S.HAUPT NOV. 1960

CHECKED BY: A.H.SMALLEY NOV. 1960

Recommended For Approval: Bridge Engineer Date 12/9/62

Recommended For Approval: Asst. Chief Engineer Date

Approved By: Chief Engineer Date 12/14/62

DETAILS OF APPROACH SLAB #2 FOR 30'-0" (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 3370 ±

LOCATION US #5 OVER I91

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

SB-AS-60

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I-91
LOG STA. —
SCALE AS NOTED
DESIGNED BY LFS CHECKED BY AER
PROJECT NO. I91-1(22) CONT #2
BR 120 OF 122 SHEET 64 220

PROFILE SCALE
HORIZ. 50 FEET
VERT. 10 FEET

SB +1.508%
NB +1.546%

NB PVI
3354+34
1900' VC
495.03
55D 933'

SB PVI
3354+33
1900' VC
500.16
55D 940'

N.B. 3365+35 ~ 3366+10
Cut to Fill Transition

SB -1.499%
NB -1.501%

S.B.
N.B.

S.B. 3363+75 ~ 3364+50
Cut to Fill Transition

520
510
500
490
480
470
460
450
440

N.B.
S.B.

3351 3352 3353 3354 3355 3356 3357 3358 3359 3360 3361 3362 3363 3364 3365 3366 3367

CONTRACT 2
Stage 21 Construction

HARTLAND-HARTFORD
I 91 - 1(22)(31)
Sheet 29 of 220
Sheet 68 of 242

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 66 OF 85

PLATE 4 (PROFILE) SCALE C. P. R. & B. S. STANDARD
MITCHELL & TAYLOR CO., NEW YORK

PROPERTY LINE FENCE
W/ STEEL POSTS, ITEM 583-B
3351+00 ~ 3366+00 S.B. Lt.
3351+00 3366+00 NB Rt
BITUMINOUS GUTTER, USING
ITEM 554
3363+50 ~ 3364+00 S.B. LT.
3364+50 ~ 3364+60 Med.
*STAGE 2 CONSTRUCTION
*STANDARD STEEL BEAM GUARD
RAIL W/STEEL POSTS, ITEM 547-A 545-A
3366+930 - 3367+00 SB Lt
JUTE MATTING ITEM 623
3363+50 ~ 3364+00 N.B. Lt.
DEMOLITION and REMOVAL
of BUILDING, ITEM 586
N.B. 3361+75 Lt
S.B. 3362+90 ℄ ← sold
SB 3363+30 Lt ← sold
Three Cable Guard Rail w/Steel Posts
3366+48 — 3367+00 N.B. Lt.
3366+00 — 3367+00 N.B. Rt.
VT. GRID
N
N.B. Curve Data
Δ 5°01'12" Lt
D 0°30'
R 11459.16
T 502.32
L 1004.00
E 11.00
Bnk. 1/4"/ft.
MERRITT, EST.
S. MILLER
COURTEMANCHE
Route U.S.5 To Hartford
MILLER
OSMER
C.V.R.
C.V. Rwy., Inc.
Central Vermont Railroad
N.E.P. Co.
BM 31-A
U.S. Elev.
486.40
BM 32-A
U.S. Elev.
512.85
BM 33-A
U.S. Elev.
514.27
BM 34-A
U.S. Elev.
471.52
BM 35-A
U.S. Elev.
443.31
POT 3352+27.50
POT 3355+98.06
SB POT 3357+86.20
S.B. POT 3361+86.20
S.B. POT 3363+90.56
SB POT 3365+18.66
S.B. P.C. 3365+35.14
N.B. P.C. 3351+97.65
N.B. POST 3358+33.69
POST 3357+86.20
N.B. P.I. 3357+00.00 = 3356+99.36
N.B. POST 3360+15.11
POST 3360+09.43
POST 3363+67.64 = N.B. P.O.T. 3363+70.27
P.I. 3362+39.29 = 3362+36.84
9°52'46" Lt.
D 1°00'
N.D. P.I. 3362+...
N.B. POT 3366+50.43
POST 3366+87.72
POST 3365+54.31
N.B. POT 3365+67.18
N0°26'W
N3°27'W
Rev. S.B. ℄
Rev. N.B.
3360+15 S.B. Rt. New 18" x 88' RCP Mod Cl. IV RCDI w/Cover
3360+00 N.B. New 18" x 64' R.C.P. Mod. Cl. III RCDI w/Cover
3360+00 - 3364+52 N.B. Rt. New 18" x 452' R.C.P. Mod. Cl. III RCDI w/Cover
3364+50 S.B. New 24" x 138' ACCGMP 14ga. RCDI w/Grate
3364+50 S.B. Lt. - 3367+40 N.B. Rt. New 54" x 396' ACCGMP B Gauge Strutted C.C.B. w/Grate
3364+55 N.B. @ 85' Lt. New 24" x 76' RCP Mod. Cl. III RCDI w/Cover
Sta. 3364+50 N.B. Rt. RR Sta. 372+54 373+15 New 60" x 213' Tunnel Liner w/24" x 20' ACCGMP to be installed by R.R. forces
440+00 25'
440+00 0'
437+50 100'
437+00 60
435+47
434+70 60
433+50 70'
431+00 80'
435+12 2'
435+32 75'
431+00 90'
3357+85 100'
3363+00 100'
3363+99 107'
3366+30 120'
3366+66 120'
3356+95 88'
3359+62 104
3361+65 67'
3362+58 83'
3364+46 168
262' 240' 125' 263' 453' 464' 412' 515' 96' 99' 227' 490' 509' 272' 41'
351A 351B 351C(S) 352 353A 353B 353C(S) 354A 340C 4A 4B 4C
cottage
GAR.
hen ho.
drive
Water Line
MATCH LINE
Remove
CONTROL OF ACCESS IS COMPLETE
ON THIS SHEET.
PLAN SCALE
0 50 100
100 FEET
PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
ALIGNMENT CHECKED
R.O.W. CHECKED
TRACED
BY
Penniman
GAjo-R. Smith
DATE
9-
2-61
3-61
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 67 OF 85
Contract 2
Stage 2 / Construction
HARTLAND - HARTFORD
I - 91 - 1 (22) (31)
Sheet 28 of 220
Sheet 67 of 242
Boston Blue Print-200-7-58

Bituminous Concrete Curb
S.B. 3372+80 – 3375+50 Lt.

SUB-BASE of SAND, ITEM 202
3367+00 - 3372+50 SB
3368+10 - 3373+60 NB

* STEEL GUIDE POSTS, ITEM 548-B
3381+00 - 3383+00 SB Rt.

* STAGE TWO CONSTRUCTION

* STANDARD STEEL BEAM GUARD RAIL w/ STEEL POSTS, ITEM 547-A 545-A 547-B
3367+00 - 3367+70 SB Lt.
3368+26 - 3368+93 NB Lt.
3367+50 - 3368+65 SB Rt.
3367+00 - 3369+29 NB Rt.

* THREE CABLE GUARD RAIL w/STEEL POSTS, ITEM 543 542
3374+00 - 3377+40 NB Rt.
3379+50 - 3380+94 NB Rt.
3380+00 - 3383+00 NB Lt.
3372+50 - 3375+80 SB Lt.
3374+22 ~ 3377+42 N.B. Rt.
3380+53 — 3383+00 N.B. Rt.
3381+85 — 3383+00 S.B. Rt.

DEMOLITION & REMOVAL of BUILDING ITEM 586
3370+85 - 3372+50 Lt - Rt SB (7 buildings) Sold
3370+25 ℄ NB
3371+00 ℄ NB Sold
3371+50 Rt NB Sold

* TREATED TIMBER CURB, ITEM 558
3372+50 - 3375+50 SB Lt.

STONE FILL for SLOPE PROTECTION ITEM 322 512
3368+00 NB Rt.
3374+00 - 3376+20 NB Rt.
3381+82 SB Rt. - 3182+00 NB Lt.
3382+00 NB Lt. - 3383+50 NB Lt.
3374+00 - 3375+60 SB Lt.
3380+10 - 3382+00 NB Rt.

PROPERTY LINE FENCE, ITEM 583-B
3368+00 - 3381+00 S.B. Lt.
3367+00 - 3368+50 N.B. Rt.
3369+80 - 3383+00 N.B. Rt.
3381+00 — 3383+00 S.B. Lt.

JUTE MATTING, ITEM 623
3375+60 - 3376+85 SB Lt.

Bituminous Concrete Surface for Gutters Item 554
3367+75 S.B. Rt
3370+75 ~ 3371+00 Med.
3374+00 ~ 3374+50 Med.

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 68 OF 85

PLAN	BY	DATE
SURVEYED	Penniman	9-61
PLOTTED	G.Aja - R.Smith	2-61
ALIGNMENT CHECKED		
R.O.W. CHECKED		
TRACED	V.B.	3-61

PLAN SCALE 0 50 100 — 100 FEET

CONTROL OF ACCESS IS COMPLETE ON THIS SHEET EXCEPT FOR DRIVE ON T.R. #78 OPPOSITE S.B. 3368+50 Lt.

Contract 2
Stage 21 Construction

HARTLAND-HARTFORD
I-91-1(22)(31)
Sheet 30 of 220
Sheet 69 of 242

Boston Blue Print-200-7-58

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
ALT. OF MAT CHECKED
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
ALIGNMENT CHECKED
STRUCTURE NO. (IF ANY)
NO.
BY
DATE

S.B. 3366+95 - 3367+70
Cut to Cut Transition

N.B. 3367+85-3368+60
Cut to Fill Transition

N.B. Eq. -3.58

N.B. 3368+44.77 = S.B. 3367+70.85 Eq. -3.58

N.B. PVI 3373+70
600' VC
466.02

S.B. Eq. -11.95

S.B. PVI 3379+40
600' VC
462.69

PROFILE SCALE
HORIZ. 50 FEET
VERT. 10 FEET

N.B. -1.501%

S.B. -1.493%

N.B. 0.000%

S.B. +0.104%

N.B. 465.60

N.B. Lt. Underdrain Gradient 1.5%

N.B. Lt. Ø 465.73

S.B. Lt. Underdrain Gradient 1.5%

S.B. 3372+65-3373+40
Cut to Fill Transition

N.B. 3373+30-3374+05
Cut to Fill Transition

S.B. 3377+00-3377+75
Fill to Cut Transition

6" Pipe N

5374.06 N.B. Invert

S.B. 3375+14.59

S.B. 3374+96.54

Eq. -1.05

490
480
470
460
450
440
430
420

3367 3368 3369 3370 3371 3372 3373 3374 3375 3376 3377 3378 3379 3380 3381 3382 3383

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 58
SHEET 6A OF 85

CONTRACT 2
Stage 2.1 Construction

HARTLAND-HARTFORD
I 91-1 (22)(31)
Sheet 31 of 220

Sheet 70 of 242

PLATE 1 PROFILE G.R.S. & R.R. RAILROAD
KLUPPEL ENGINEERING, NEW YORK

PLAN		BY	DATE
NOTE BOOK	SURVEYED	Watson - Martin	1-62
	PLOTTED	Sheridan	2-62
	ALIGNMENT CHECKED		
NO.____	R.O.W. CHECKED		
	TRACED	V.H.	4-62

PLAN
SUBMITTED
PLOTTED
NOTE BOOK
ALIGNMENT CHECKED
ST. OF WAY CHECKED
NO.

PROFILE
SUBMITTED
PLOTTED
NOTE BOOK
CROSS SECTIONS
R. R.'S NOTED
STRUCTURE NOTATIONS
NO.

BY
Wilson-Martin
WJS
DATE
1-62
4-62

TOWN ROAD STA. 0+00 = US 5 POC 428+00

+5.729 %

+3.17 %

present road profile

9+00
END CONSTRUCTION

5+50
300' VC
541.56
SSD 423'

End Bridge - Back of Abut. #2 Sta. 426+70

420+75
BEGIN CONSTRUCTION

+6.33 %

375'
54' 79' 54' 94' 94'

Begin Bridge - Back of Abut. #1 Sta. 422.30

℄ Pier #1 423+49

℄ Pier #2 424+28

℄ Pier #3 424.82

℄ Pier #4 425+76

-5.000 %

present road profile

Treated Timber Piles (Typical)

428+40
1030' VC
523.44
SSD 382'

PROFILE SCALE
HORIZ: 50 FEET
VERT. 10 FEET

TOWN ROAD # 78
SIDE LINE Rt. U.S. Rte. 5
@ P.O.C. 428+00
Contract 2
Sheet of

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 71 OF 85

U.S. Rte. 5 @ N.B. 3368

HARTLAND - HARTFORD
I 91 - 1 (22)
Contract 2
Sheet 40 of 220

EXCAVATION AND REMOVAL OF ROAD SURFACE ON ROADWAYS ITEM 118-A
430+00 - 431+25 ✓

THREE CABLE GUARD RAIL w/ STEEL POSTS ITEM 543
430+00 - 434+00 @ Lt.

Rev. N.B. PT 3362+01.66

hen ho.

3383

cottage

3363+00 100'

Sta. P.C. 335+35.14

430+25 430+75 Lt. Spec. Ditch, Item 103

431+00 Lt. New 12"x44" CGMP, 16 ga. or ERCP-16ga. w/ 2-2/3"x1/2" Spec. Elbows @ 10'-6" & 2 Cplg. Bands @ all joints. P.R.C.C.I. w/ Grate, @ Inlet

96'

412'

431+00 90'

3538

430

431

432

433

434

435

436

437

438

439

440

OSMER COURTEMANCHE present U.S. Route 6

P L

130'

263'

431+00 80' ✓

DITCH

PI 4

433+50 70' ✓

354A

125'

COURTEMANCHE & MERRITT, EST. L

434+00 Lt. ERCP-16ga. w/ Grate

434+70 60' ✓

POST 434+95.2

240'

435+32 75' ✓

435+12

351B

79'

434+00 Lt. New 12"x44" CGMP, 16 ga. or ERCP-16ga. w/ 3x6 Elbows & 16"x1" Cplg. Bands @ all joints

434+50 New 18"x11" RCP Mast. Class III or ACCGMP, #16ga. or ACCAAECP-16ga. 15.2 CY REMOVE ✓

OSMER MILLER

435+97 L

BM 3 U.S. Elev. 487.57

Approx. Aerial Utility Relocation Route by C.V.P.S. Corp. & Hartland Telephone Co.

1.52 ft

437+52 L

464'

MILLER 237

MERRITT, EST. 453'

352

262'

65'

437+00 60' ✓

437+50 100' ✓

439+20 15" RCP ✓ New 18" x 11" RCP Mast. Class III or ACCGMP, #16ga. or ACCAAECP-16ga.

S.H. 35.96

S.H. 35.96

439

438

D L S 2°04' E

440+00 25' ✓

440+00 0

440+00 25' ✓

POST 440+00.0

N

VT. GRID

PLAN SCALE
0 50 100
100 FEET

PROFILE SCALE
HORIZ. 50 FEET
VERT. 10 FEET

520
510
500
490
480

436+20
300' V.C.
486.44

-5.000%

-0.426%

present road profile

439+50
End Construction
U.S. #5
Construct Approach

U.S. Route 5 is to be built in its entirety during Stage 1 Construction.

U.S. Rte. 5 @ NB 3360

HARTLAND - HARTFORD
I 91-1(22)
Contract 2
Sheet 41 of 220

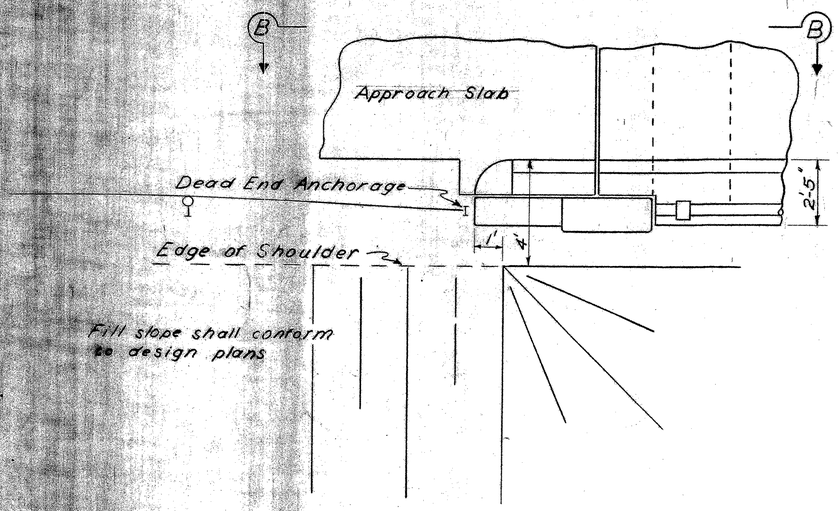
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 72 OF 85

PLAN — DESIGNED — DRAWN — TRACED — CHECKED — QUANTITIES CHECKED — NOTE BOOK — ALIGNMENT CHECKED — PLOTTED — NO. — STRUCTURE DESIGN CHECKED

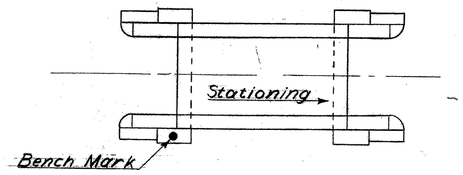
TITLE — DESIGNED — DRAWN — TRACED — CHECKED — QUANTITIES CHECKED — NOTE BOOK — PLOTTED — NO. — STRUCTURE DESIGN CHECKED

Watson - Martin WD

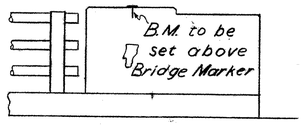
DATE 1-62 4-62



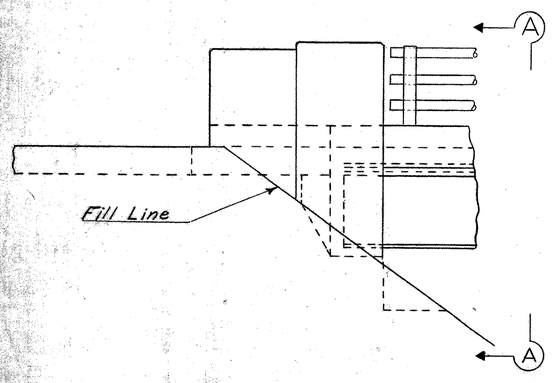
PLAN OF END POST



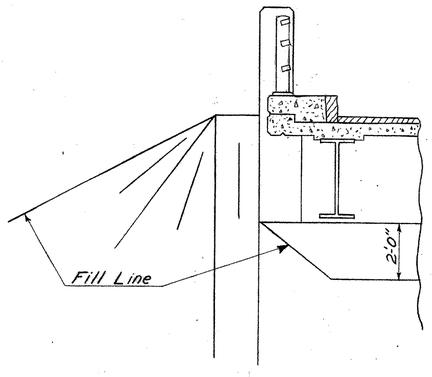
Bridge Marker to be set on right end post at low bridge station as shown



SECTION - B-B



ELEVATION OF END POST



SECTION - A-A

GENERAL - NOTES

SPECIFICATIONS: ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1961.
DESIGN IS FOR H20-S16-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF THE A.A.S.H.O. STANDARD SPECIFICATIONS, ARTICLE 1.2.8.

STRUCTURAL STEEL: UNLESS OTHERWISE NOTED ON THE PLANS ALL STRUCTURAL STEEL SHALL CONFORM WITH A.S.T.M. DESIGNATION A-36-62 T.
UNLESS OTHERWISE DETAILED ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø HIGH STRENGTH BOLTS, USING 15/16"Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS, THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.

DETAILS OF SHEAR CONNECTORS SHALL BE SUBMITTED TO THE STATE FOR APPROVAL. EITHER CHANNEL OR STUD CONNECTORS MAY BE SUBSTITUTED IN LIEU OF THE SPIRAL. STUDS SHALL BE SUBSTITUTED ON THE BASIS OF TWO (2) 3/4" STUD FOR EACH PITCH OF A 5/8" Ø SPIRAL, OR ON THE BASIS OF TWO (2) 7/8" STUDS TO 1 1/2 TIMES THE PITCH OF A 5/8" Ø SPIRAL. NO SCUPPERS SHALL BE USED ON GRADE SEPARATIONS UNLESS INDICATED ON THE PLANS.

ON SUPERELEVATED BRIDGES, PLACE SCUPPERS ON THE LOW SIDE ONLY. EXCEPT FOR THE ABOVE RESTRICTIONS, SCUPPERS ARE NORMALLY PLACED MIDWAY BETWEEN INTERMEDIATE DIAPHRAGMS. PAYMENT FOR SCUPPERS SHALL BE INCLUDED IN THE UNIT PRICE FOR STRUCTURAL STEEL, ITEM 404.

UNLESS OTHERWISE CALLED FOR, BEAMS SHALL BE CAMBERED TO THE MINIMUM CAMBER LIKELY TO REMAIN PERMANENT AS INDICATED IN THE A.I.S.C. HANDBOOK. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK.
AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS OF THE TOP OF THE ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER TO DETERMINE THE FINAL GRADE.

PAINT: THE FINAL COAT OF FIELD PAINT SHALL BE GREEN, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONCRETE: ALL CONCRETE IN THE SUPERSTRUCTURE SHALL BE CLASS AA(MOD) ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1" UNLESS OTHERWISE INDICATED ON THE PLANS.
CONSTRUCTION JOINTS SHALL BE AS INDICATED ON THE STANDARDS UNLESS OTHERWISE INDICATED ON THE PLANS.

REINFORCING STEEL: FOR SKEWED BRIDGES: TRANSVERSE BARS, "S 1" SHALL BE FURNISHED AS FOR A SQUARE SPAN; THE "S1" BARS SHALL BE CUT IN THE FIELD TO FIT THE SKEWED END, THE CUT-OFF BARS SHALL BE USED AT THE OPPOSITE END OF THE SPAN; THE S 5 BARS SHALL BE LENGTHENED AND THE NUMBER OF S6A AND S7 BARS SHALL BE INCREASED; THE S6B BARS SHALL BE ADDED AT PIERS AS INDICATED. MINIMUM COVER FOR REINFORCING STEEL, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF THE REINFORCEMENT, SHALL BE 3" UNLESS OTHERWISE SPECIFIED.

QUANTITIES: THE QUANTITIES GIVEN IN THE SCB-24 TO 44-62 STANDARDS ARE NET QUANTITIES FOR A SINGLE SQUARE SPAN.

GENERAL: NORMALLY THE FIXED END BEARING DEVICE IS ON THE DOWN-GRADE END OF THE SPAN. UNLESS OTHERWISE DESIGNATED ALL EXPANSION MATERIAL SHALL NOT CONTAIN ASPHALT OR BITUMINOUS MATERIAL AND IT SHALL CONFORM WITH A.A.S.H.O. DESIGNATION: M153 TYPE II.

ALL DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY OR VERTICALLY UNLESS OTHERWISE NOTED.

BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND ARE NOT WARRANTED TO SHOW ACTUAL SUB-SURFACE CONDITIONS.

TOP SURFACES OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/4" PER FOOT EXCEPT AT BEARING PADS, WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FROM THE FRONT EDGE OF THE CURTAIN WALL OR FACE OF BACKWALL, AND PIERS SHALL BE SLOPED FROM THE CENTERLINE OF PIER.

THE ENTIRE EXPOSED TOP SURFACE OF THE ABUTMENTS AND PIERS SHALL BE COATED WITH ASPHALTIC ASBESTOS COATING 1/2" THICK AS PER ITEM 407. THIS ITEM SHALL BE APPLIED AFTER ALL PAINTING AND INCIDENTAL ITEMS ARE COMPLETED.

ALL DIMENSIONS ARE GIVEN AT 68° F. UNLESS OTHERWISE NOTED.

WHERE BITUMINOUS CONCRETE PAVEMENT IS CALLED FOR AS A WEARING SURFACE ON BRIDGE DECKS AND APPROACH SLABS IT SHALL BE A DENSE GRADED TOP COURSE MATERIAL, APPLIED IN ONE COURSE, ONE AND ONE HALF (1 1/2) INCHES THICK. THE ITEM TO BE USED SHALL BE DESIGNATED ON THE PLANS, EITHER AS ITEM 361-B OR ITEM 363.

PILES: STEEL PILES SHALL BE DRIVEN TO REFUSAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WHERE PILES ARE DRIVEN IN FILL, THE MATERIAL SHOULD BE SUCH AS TO HAVE NO STONES LARGE ENOUGH TO INTERFERE WITH THE DRIVING OF PILES.

REVISIONS & CORRECTIONS

Drawn By: XX Date: Dec. 1962
Traced By: XX Date: Dec. 1962
Checked By: E.F.E. W.M.S. R.S.H. Date: Dec. 1962

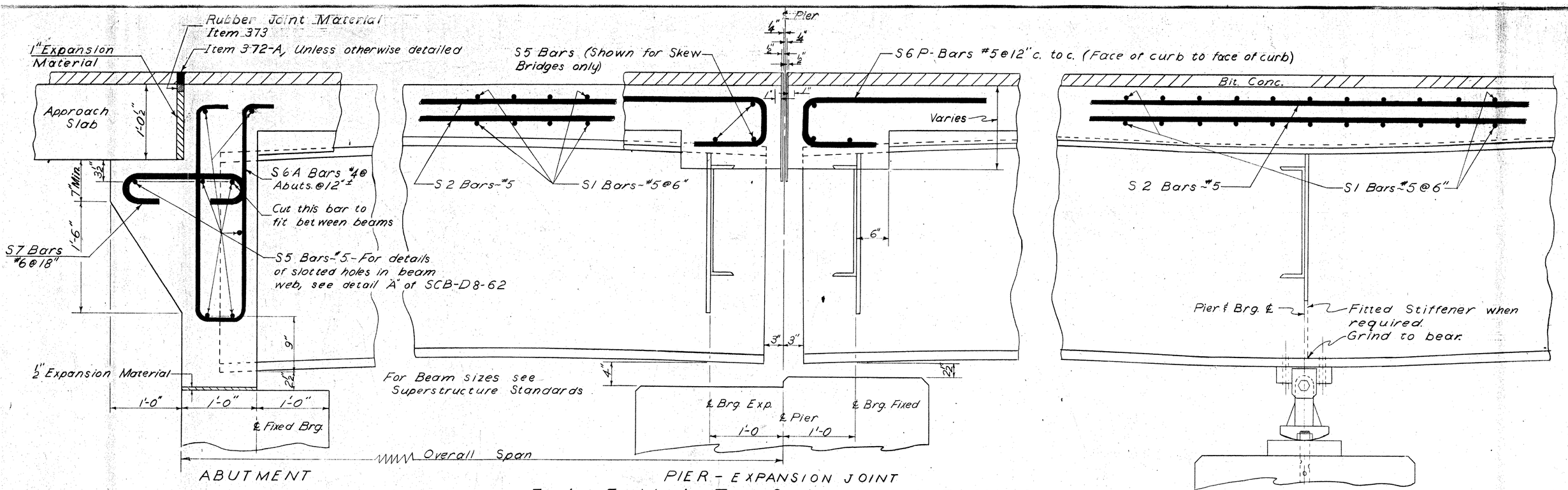
Recommended For Approval: Lin Ryan, Bridge Engineer — Date 12/7/62
Recommended For Approval: Assist. Chief Engineer — Date 1/4/63
Approved By: Chief Engineer — Date 1/4/63

DETAILS OF WF BEAM BRIDGES
GENERAL INFORMATION & GENERAL NOTES

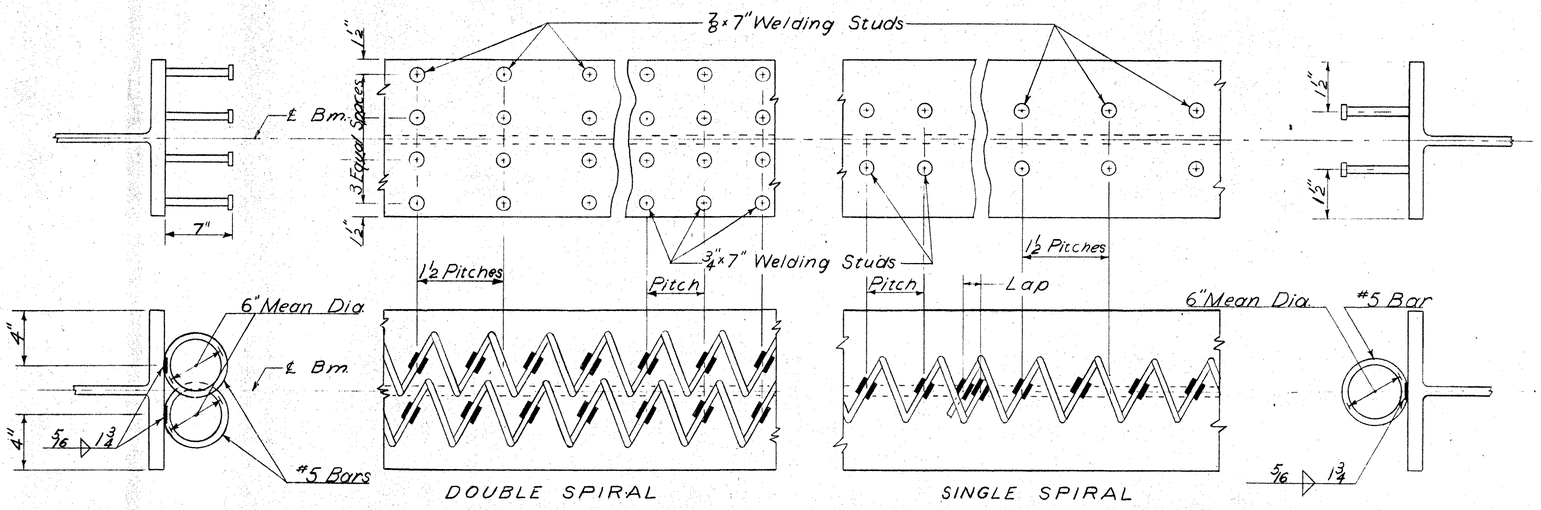
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 82 OF 85

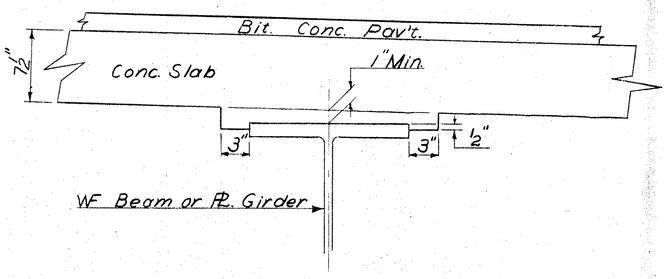
SCB-DI-62



E L E V A T I O N V I E W S



SHEAR CONNECTOR DETAILS



BEAM HAUNCH

REVISIONS & CORRECTIONS
ised Joint Sealer Items 372- and
3. Changed S5 Bar in Curtain Wall
S6A Bars. 6-21-63 XX

Drawn By: XX Date: Dec. 4 1962
Traced By: XX Date: Dec. 4 1962
Checked By: E.E.P. W.M.S. R.S.H. Date: Dec. 4 1962

Recommended _____ 12/7/62
For Approval Bridge Engineer Date
Recommended _____ 1/4/63
For Approval Assist. Chief Engineer Date
Approved By _____
Chief Engineer Date

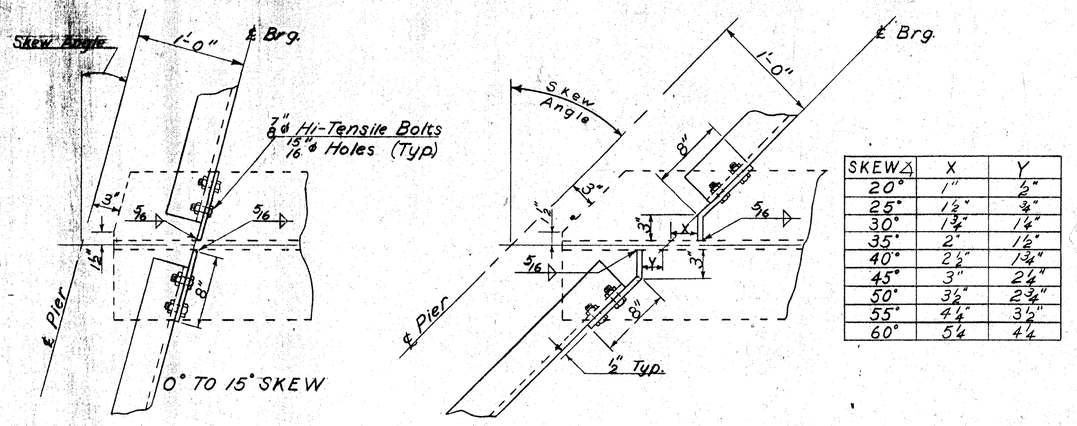
DETAILS OF WF BEAM BRIDGES

(A) ELEVATION VIEWS
(B) SHEAR CONNECTOR DETAILS
(C) BEAM HAUNCH DETAIL

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 83 OF 85

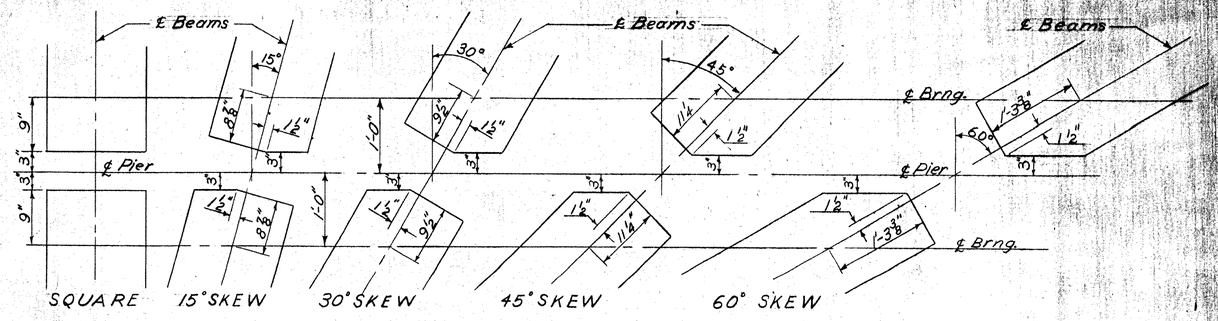
SCB-D2-62



SKEW △	X	Y
20°	1"	1/2"
25°	1 1/2"	3/4"
30°	1 3/4"	1 1/4"
35°	2"	1 1/2"
40°	2 1/2"	1 3/4"
45°	3"	2 1/4"
50°	3 1/2"	2 3/4"
55°	4 1/4"	3 1/2"
60°	5 1/4"	4 1/4"

DETAILS OF PIER DIAPHRAGM CONNECTIONS

(A)

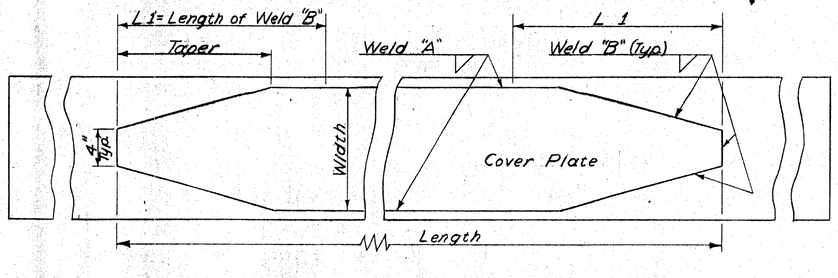


INTERIOR WF BEAM CUT-OFFS AT PIER

(B)

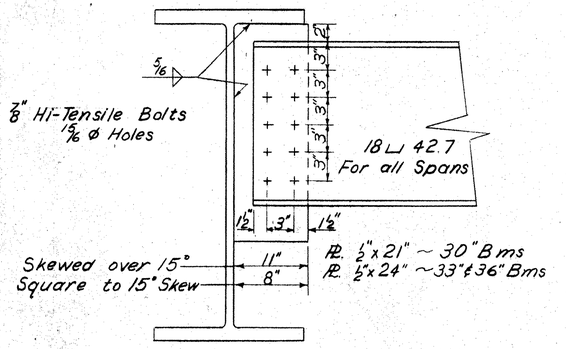
Max. Design 7'-6 Bm. Spacing ~ S.C.B-24, 30, 38, 44-62							
SPAN	Cover Pl. Length	Width	Thick-ness	Taper	Weld "A"	Weld "B"	L 1
99'-0	66'-1	14"	1 1/2"	1'-6	3/8"	1/2"	3'-5 1/2
94'-0	65'-7	14"	1 5/8"	1'-6	3/8	1/2	3'-5 1/2
89'-0	59'-5	14"	1 1/4	1'-6	5/16	1/2	2'-10
84'-0	49'-5	14"	7/8"	1'-6	5/16	1/2	1'-11
79'-0	49'-10	10"	1 1/4"	1'-0	5/16	1/2	2'-0
74'-0	47'-1	10"	1 1/8"	1'-0	5/16	1/2	1'-9 1/2
69'-0	45'-9	10"	1"	1'-0	5/16	5/16	—
64'-0	42'-5	10"	7/8"	1'-0	5/16	5/16	—
59'-0	31'-11	10"	3/4"	1'-0	5/16	5/16	—
54'-0	27'-1	8"	1/2"	1'-0	5/16	5/16	—

Max. Design 7'-0 Bm. Spacing S.C.B. -42-62							
Cover Pl. Length	Width	Thick-ness	Taper	Weld "A"	Weld B	L 1
67'-5	14"	1 1/2"	1'-6	3/8	1/2	3'-5
64'-7	14"	1 3/8"	1'-6	3/8	1/2	3'-5 1/2
54'-9	14"	1"	1-6	5/16	1/2	2'-3
45'-1	14"	5/8"	1'-6	5/16	5/16	—
48'-11	10"	1 1/8"	1'-0	5/16	1/2	1'-9 1/2
48'-1	10"	1"	1'-0	5/16	5/16	—
41'-3	10"	3/4"	1'-0	5/16	5/16	—
37'-8	10"	5/8"	1'-0	5/16	5/16	—
29'-1	8"	1/2"	1'-0	5/16	5/16	—
27'-1	8"	1/2"	1'-0	5/16	5/16	—



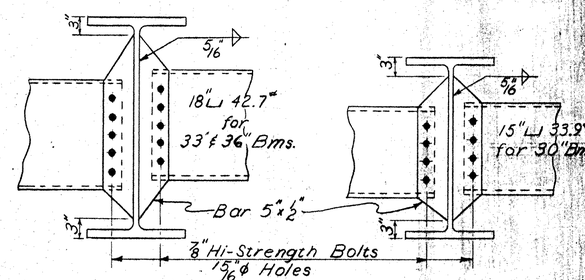
COVER PLATE DETAILS

(C)



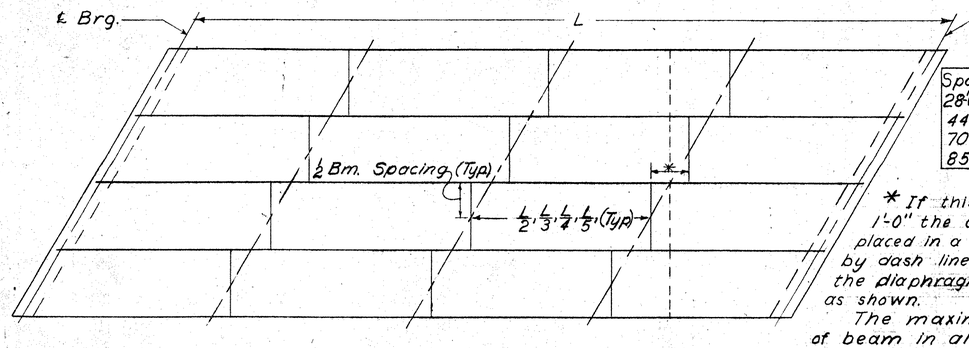
PIER DIAPHRAGMS

Hi-Strength Bolts, Nuts & Washers shall conform to A.A.S.H.O. Designation M 164-60



INTERMEDIATE DIAPHRAGMS

(D)



Span Length		Sets of Diaph. Required
28'0 through 43'		1
44'-0	69'0	2
70'-0	84'-0	3
85'-0	99'-0	4

* If this dimension is less than 1'-0" the diaphragms may be placed in a straight line as indicated by dash line. If it is greater than 1'-0 the diaphragms shall be staggered as shown.

The maximum unbraced length of beam in all cases shall be 25'-0

DIAPHRAGM LOCATION PLAN

(E)

REVISIONS & CORRECTIONS
Added size of Diaphragms on Detail D 6/21/63 WW

Drawn By: WW Date: Dec. 1962
Traced By: WW Date: Dec. 1962
Checked By: E.E.P. W.M.S. R.S.H Date: Dec. 1962

Recommended _____ 12/17/62
For Approval Bridge Engineer Date

Recommended _____ 1/14/63
For Approval Assist. Chief Engineer Date

Approved By _____ 1/14/63
Chief Engineer Date

DETAILS OF WF BEAM BRIDGES
STRUCTURAL STEEL DETAILS
(A) (D) (E) DIAPRAGM DETAILS
(B) WF BEAM CUT-OFFS
(C) COVER PLATE DETAILS

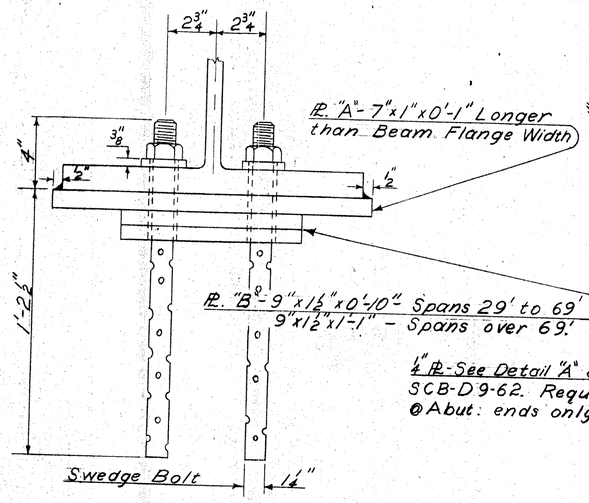
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 84 OF 85

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

SCB-D 7-62

253

When bridge is on a grade exceeding 5%, plate "A" shall be beveled to fit, with a mean thickness of 1".



Approx. Wgt. = 90 lbs.

DETAIL FOR 0° TO 15° SKEW

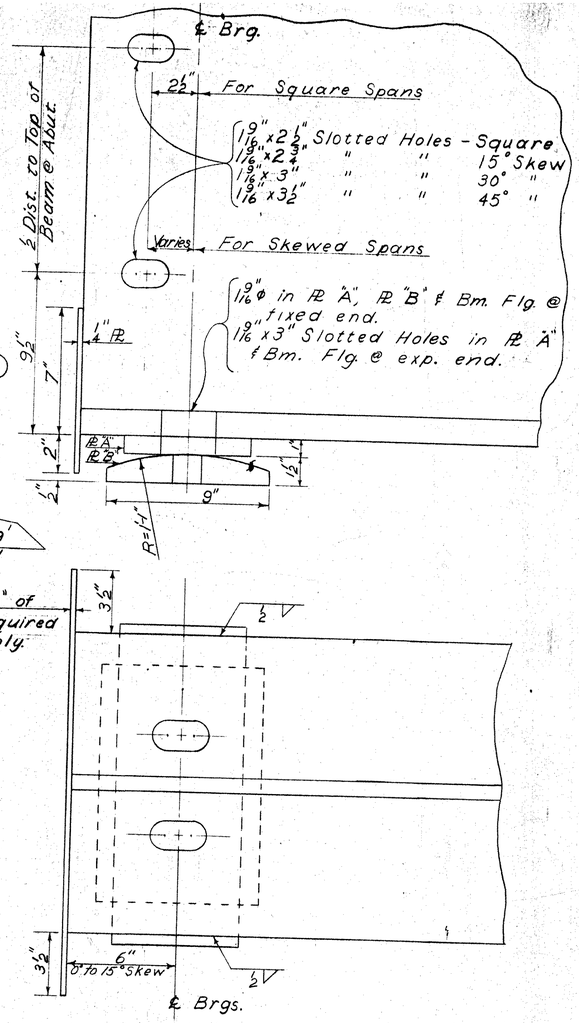
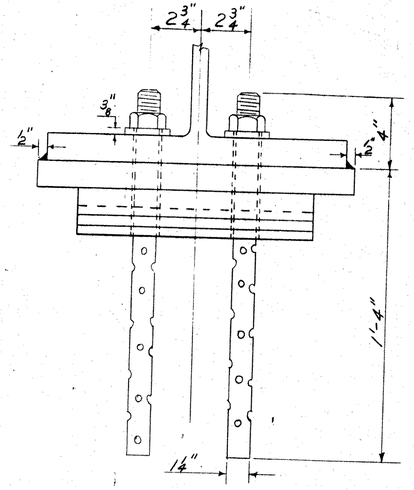


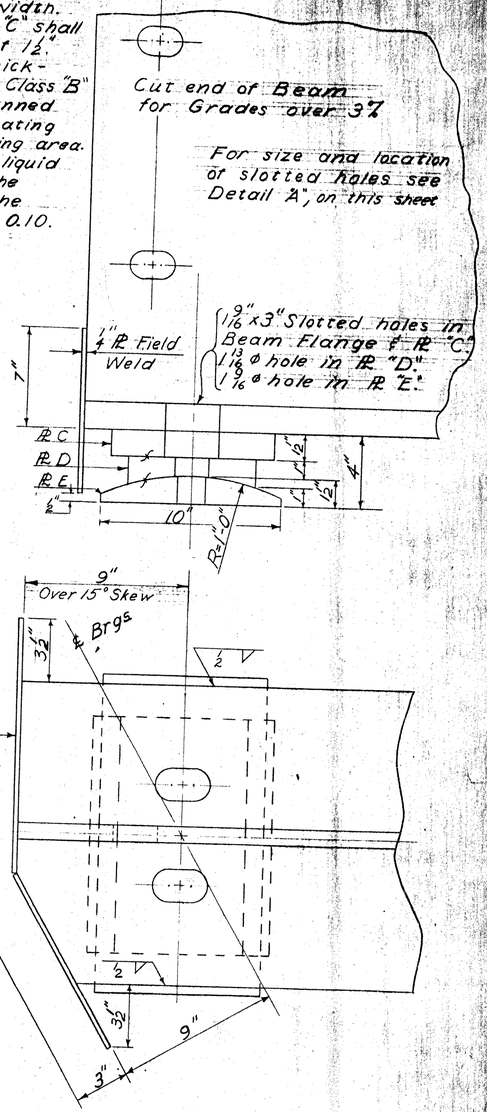
Plate "C" - 9"x1½"x1'-1" longer than the beam flange width. When the bridge is on a grade exceeding 5%, plate "C" shall be beveled to fit the grade with a mean thickness of 1½".

Plate "D" - 7"x(outer edge thickness 1½", center thickness 1")x1'-1". To be Cast Bronze - A.S.T.M. - B 22-40T. Class "B" unless otherwise specified. This plate shall have trepanned recesses filled with a lubricating compound. The lubricating area shall comprise not less than 25% of the total bearing area. The manufacturer shall supply additional lubricant in liquid form with which the Contractor shall thoroughly coat the bearing surfaces that contact the lubricated portion of the bronze plate. The coefficient of friction shall not exceed 0.10.

Plate "E" - 10"x½"x1'-1". Finish as indicated.



Approx. Wgt. = 150 lbs.



Attention is called to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, Item #404, paragraph 404.02(T) for bearing materials for Shoes and Pedestals.

FIXED END BEARING DEVICE
USE FOR EXPANSION END ON SPANS UP TO AND INCLUDING 69'

EXPANSION END BEARING DEVICE
FOR SPANS OVER 69'

(A) (B)

REVISIONS & CORRECTIONS
Revised weight of Exp. Brg. Device to 150 Lbs. 6/27/63 WM

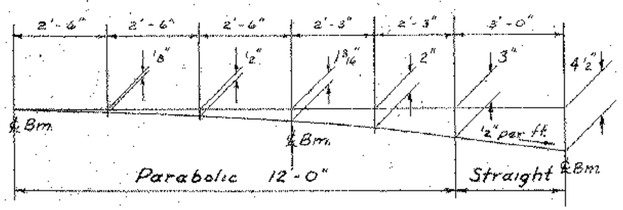
Drawn By: WM Date: Dec. 1, 1962
Traced By: WM Date: Dec. 1, 1962
Checked By: E.F.B. W.M.S. R.S.H Date: Dec. 1, 1962
Recommended For Approval: Bridge Engineer 12/7/62 Date
Recommended For Approval: Asst. Chief Engineer 1/4/63 Date
Approved By: Chief Engineer 1/4/63 Date

DETAILS OF WF BEAM BRIDGES
BEARING DEVICES

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

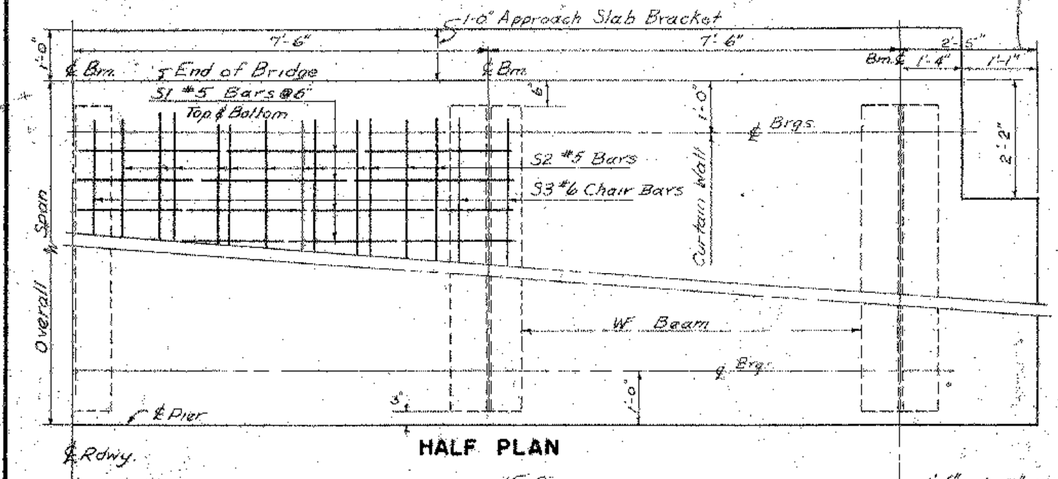
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 85 OF 85

SCB-D8-62

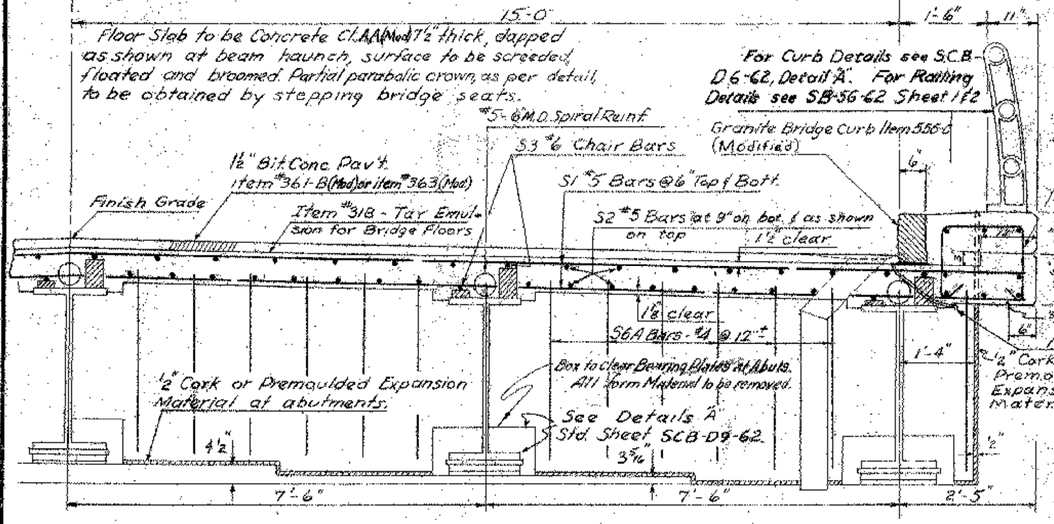


DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB

*Excluding Scuppers & Bearing Devices



HALF PLAN



TYPICAL HALF SECTION

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

Span, Out to Out	99-0	94-0	89-0	84-0	79-0	74-0	69-0	64-0	59-0	54-0	49-0	44-0	39-0	34-0
Span, ℄ to ℄ Brngs.	97-0	92-0	87-0	82-0	77-0	72-0	67-0	62-0	57-0	52-0	47-0	42-0	37-0	32-0
Length of Bms.	98-0	93-0	88-0	83-0	78-0	73-0	68-0	63'-0	58-0	53-0	48-0	43-0	38-0	33-0
Size W Beam	36WF280	36WF245	36WF230	36WF230	36WF194	36WF170	36WF150	36WF135	36WF135	36WF135	36WF135	36WF135	33WF118	30WF108
Lgth. & Size Cover Pl (Bott. only)	66'-7"/8" 17"×2¼"	65'-7"/8" 16"×2¼"	39'-5"/8" 14"×1¾"	43'-5"/8" 14"×1⅞"	43'-8"/8" 10"×1¼"	43'-1"/8" 10"×1⅛"	43'-9"/8" 10"×1⅛"	43'-5"/8" 10"×1"	37'-11"/8" 10"×⅞"	27'-11"/8" 8"×⅞"	—	—	—	—
Dead Load Deflection	3½"	3⅜"	2⅝"	2'4"	1'8"	1⅝"	1⅝"	1⅜"	⅞"	⅝"	½"	⅜"	¼"	⅛"
Dia. of Spiral Bars	—	—	—	—	—	—	⅝"	—	—	—	—	—	Non Composite	
Mean Dia. of Spiral	—	—	—	—	—	—	6"	—	—	—	—	"	"	
Spiral Pitch 0'-10" from Brng.	Double @ 5½	Double @ 5½	Double @ 5½	Double @ 5½	Double @ 5	Double @ 5	Double @ 5	Double @ 5	Double @ 5	Double @ 5½	Double @ 6½	"	"	
" " 10'-20" or ℄ Span	Double @ 6½	Double @ 6"	Double @ 6½	Double @ 7"	Double @ 7"	Double @ 7½	Double @ 7"	Double @ 7"	Double @ 7"	Double @ 7"	Double @ 7½	"	"	
" " 20'-30" or ℄ Span	4"	4"	4½	4½"	4½"	4½"	4½"	5"	5½"	6"	6"	"	"	
" " 30'-40" or ℄ Span	5"	5"	5"	6"	6"	6"	6"	5"	—	—	—	"	"	
" " 40' ℄ Span	6½"	6½"	6"	6"	—	—	—	—	—	—	—	"	"	
*Tot. Struct. Steel (1 span) (lbs.)	169,590	145670	126,840	112,050	92,150	76,670	62,740	52,610	45,490	41150	35830	32390	24,240	19280
Reinforcing Bars - S1	396	376	356	336	316	296	276	256	236	216	196	176	156	136
" " - S2	225	225	225	225	225	225	225	150	150	150	150	150	150	75
" " - S3	30	30	30	30	30	30	30	20	20	20	20	20	20	10
" " - S4	132	126	120	112	106	100	92	86	80	72	66	60	52	46
" " - S5	16	16	16	16	16	16	16	16	16	16	16	16	16	16
" " - S6A	52	52	52	52	52	52	52	52	52	52	52	52	52	52
" " - S7	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Tot. Weight - Reinf. Bars (lbs.)	25,300	24,100	22,900	21,700	20,400	19,300	18,000	16,600	15,400	14200	13,000	11,800	10,600	9,200
Approx. Wt. Spiral Reinf. (lbs.)	2,580	2550	2,380	2,190	2,160	2,040	1,990	1,860	1700	1560	1440	Non Composite		
Tot. Cu. Yds. Conc. Class "AA" - (Cu. yds.)	116	111	106	101	95	90	85	79	73	68	63	58	51	45
Tot. Wt. Bitum. Conc. Pav't. (Mod.) (Tons)	32	30	29	27	26	24	22	21	19	18	16	15	13	12
Tot. Emulsion for Bridge Floors (Gals.)	132	125	119	112	105	99	92	85	79	72	65	59	52	45
Approx. Quantity 3/4" × 7" Studs	3180	3120	2940	2680	2640	2500	2440	2280	2120	1900	1760	Non Composite		
Approx. Quantity 5/8" × 7" Studs	2,110	2080	1960	1790	1760	1670	1630	1520	1410	1270	1170	Non Composite		

REINFORCING STEEL SCHEDULE

S1 - #5 34'-4" Straight | S5 - #5 32'-2" Straight

Span	S2 - #5 Str. Length	S3 - #6 Str. Length	S6A - #4 B & D	S6A - #4 Total Length	S4 - #4	S6A - #4
34	33'-6"	33'-6"	2'-6"	6'-6"	T.L. = 5'-3" B = 1'-6" D = 1'-6" C = 1'-5" H = 3" A-5" G-5"	T.L. Varies A-5" G-5" A G B D C-B
39	20'-3"	20'-6"	2'-9"	7'-0"		
44	22'-9"	23'-0"	3'-0"	7'-6"		
49	25'-3"	25'-6"	3'-0"	7'-6"		
54	27'-9"	28'-0"	3'-0"	7'-6"		
59	30'-3"	30'-6"	3'-0"	7'-6"		
64	32'-9"	33'-0"	3'-0"	7'-6"		
69	24'-3"	24'-6"	3'-2"	7'-10"		
74	26'-0"	26'-3"	3'-2"	7'-10"	S7 - #6	S6P - #5
79	27'-6"	28'-0"	3'-3"	8'-0"	T.L. = 3'-0" B = 1'-8" J = 6" A-8" G-8"	T.L. = 4'-2" B = 2'-6" C-8" D-1'-0"
84	29'-3"	29'-6"	3'-3"	8'-0"		
89	31'-0"	31'-3"	3'-3"	8'-0"		
94	32'-6"	33'-0"	3'-4"	8'-2"		
99	34'-3"	34'-6"	3'-4"	8'-2"		

Revisions & Corrections

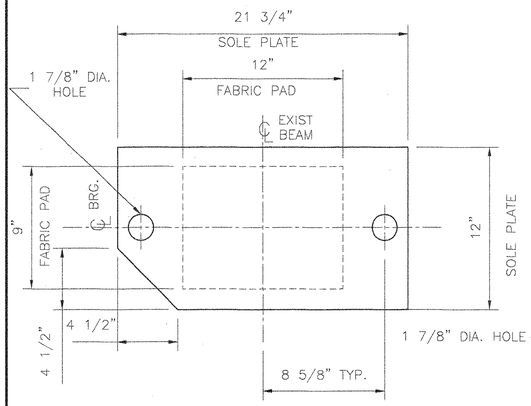
Drawn By: R.S.H. June 1960
Traced By: R.S.H. June 1960
Checked By: R.T.B. & R.S.H. July 1960

Recommended For Approval: Bridge Engineer — 10/5/62 Date
Recommended For Approval: Asst. Chief Engineer — 10/8/62 Date
Approved By: Chief Engineer — 11/1/62 Date

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
30 FOOT ROADWAY WF BEAM BRIDGES
DESIGN LOADING - H-20-S16-44 (A.S.T.M. - A36-62T STEEL)
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-62

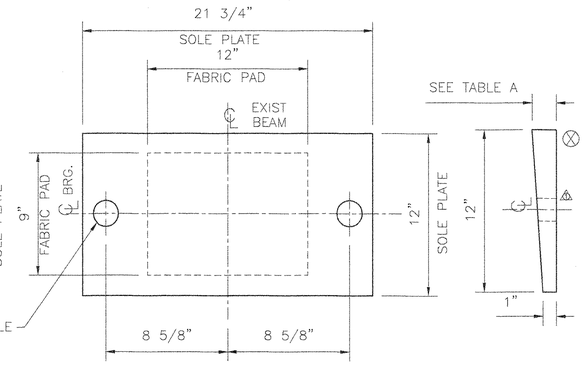
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-30-62



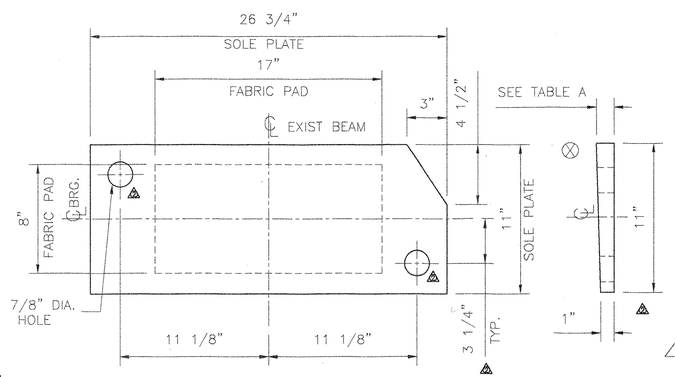
PLAN

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B2–B5
QUANTITY: 4



PLAN

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B1, B21–B30
QUANTITY: 11

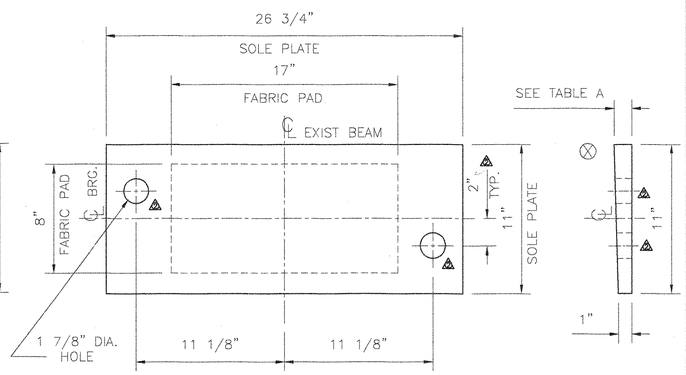


PLAN

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B46–B49 ABUTMENT 2
QUANTITY:4

SIDE ELEVATION

SOLE PLATE ONLY
B46–B49 ABUTMENT 2

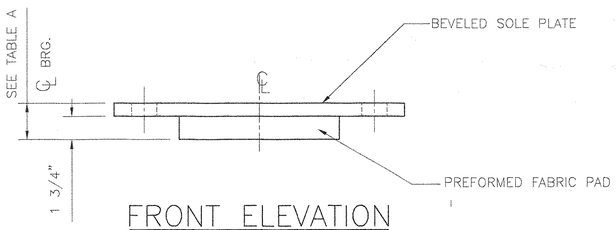


PLAN

FIXED PREFORMED FABRIC PAD BEARINGS
LOCATION: B31–B35 PIER 3, SPAN 4
QUANTITY: 5

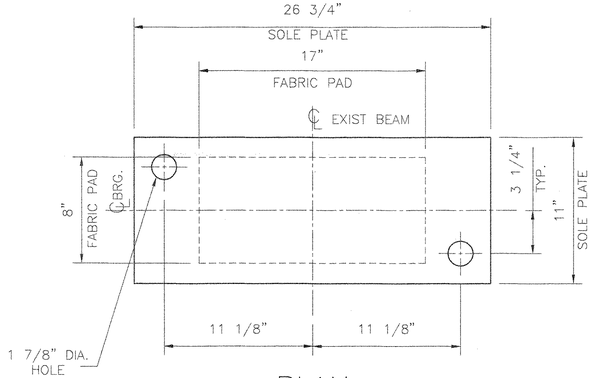
SIDE ELEVATION

SOLE PLATE ONLY
B31–B35



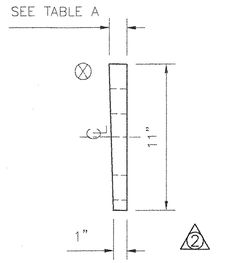
FRONT ELEVATION

B1–B5, B21–B30



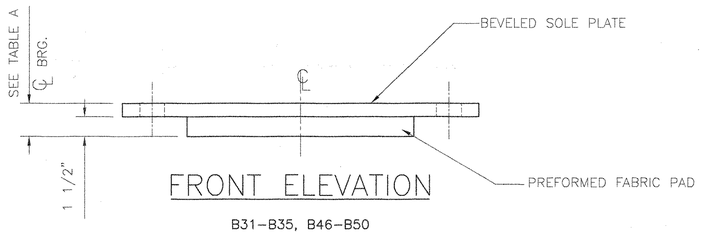
PLAN ⚠2

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B50 ABUTMENT 2
QUANTITY:1



SIDE ELEVATION

SOLE PLATE ONLY
B50 ABUTMENT 2



FRONT ELEVATION

B31–B35, B46–B50

TABLE A

	SOLE PLATES	SOLE PLATE ⚠ THICKNESS AT CENTER LINE	THICK END OF BEVEL	BEARING ASSEMBLY HEIGHT AT CENTER LINE ⚠
SHT 1	FIX B1–B5	1.41"	1.82"	3.16"
SHT 3	EXP B6–B10	1.39" .12	1.78"	(3.14) 3.26"
SHT 3	EXP B11–B15	1.41"	1.82"	(3.16) 3.28"
SHT 2	FIX B16–B20	1.35"	1.70"	3.1"
SHT 1	FIX B21–B25	1.32"	1.64"	3.07"
SHT 1	FIX B26–B30	1.29"	1.58"	3.04"
SHT 1	FIX B31–B35	1.24"	1.48"	2.74"
SHT 3	EXP B36–B40	1.24"	1.48"	(2.74) 2.86"
SHT 2	EXP B41–B45	1.20"	1.40"	(2.70) 2.82"
SHT 1	FIX B46–B50	1.16"	1.32"	2.66"

16" Flange

16" Flange

MATERIAL:
STEEL– AASHTO M–270, GRADE 36 (ASTM A709 GR.36) METALIZED
STAINLESS STEEL– ASTM A240 TYPE 304, 10 RMS FINISH OR LESS
PTFE– ASTM D1457
PREFORMED FABRIC PAD– AASHTO 10.4.10.1
ANCHOR BOLTS– F1554, GRADE 55, SWEDGED AND GALVANIZED

NOTES:
1. ⊗ MARKS THE UPSTATION SIDE OF THE BEARING
2. ALL BEARING DEVICES SHALL BE METALIZED AS PER SUBSECTION 531.04 (B) AND 506.15 OF THE GENERAL SPECIAL PROVISIONS. AREAS OF METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATIONS 513 WHICH REFERENCE ASTM A760.
3. ALL CORNERS AND EDGES OF STEEL PLATES SHALL BE GROUND TO A 1/16" RADIUS.
4. BEARING MUST NOT BE DISASSEMBLED
5. LOCATION OF FABRICATION 70 SOUTH ST. WALPOLE, MA 02081
6. COSMEC REPRESENTATIVE: MR. MATT McANDREWS (508–668–6600)

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED APPROVED AS REVISED REJECTED	NONE CONFIRM RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM, THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY [signature] DATE 2/4/03

STATE OF VERMONT

AGENCY OF TRANSPORTATION

PROJECT NO. IM 091–1(36)
BRIDGE 38
HIGHWAY NO. I–91
TOWN OF HARTLAND

SHEET 1 OF 3

086

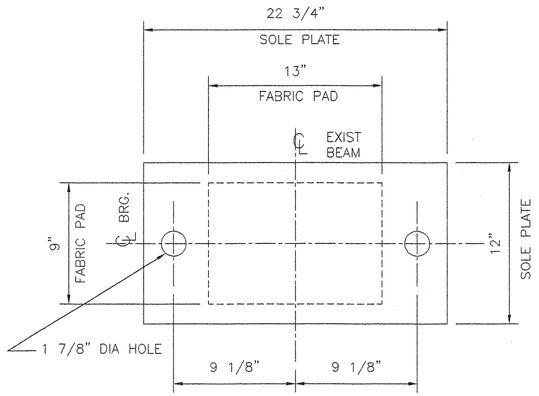
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 3/16"=1"	DRAWN BY: MK	DATE: 6/17/03	CHECK BY: RFC	DATE: 6/30/03

PREFORMED FABRIC PAD BEARINGS

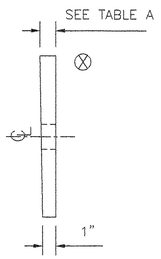
CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
FRANK W. WHITCOMB	59856	3897	2

REV.	DESCRIPTION	BY	DATE	CHECKED	DATE
⚠	CHANGED HOLE LOCATIONS FOR ABUTMENT BEARINGS & BEARINGS @ SPAN 4 & 5, & PLAN FOR BEARING 50	MK	7/22/03	MCM	7/22/03
⚠	ADDED HIDDEN LINES, SOLE PLATE & BEARING ASSY	MK	7/15/03	NH	7/15/03



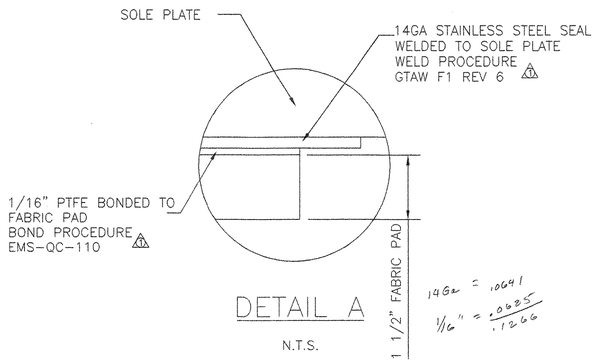
PLAN

FIXED PREFORMED FABRIC PAD BEARINGS
LOCATION: B16–B20
QUANTITY: 5



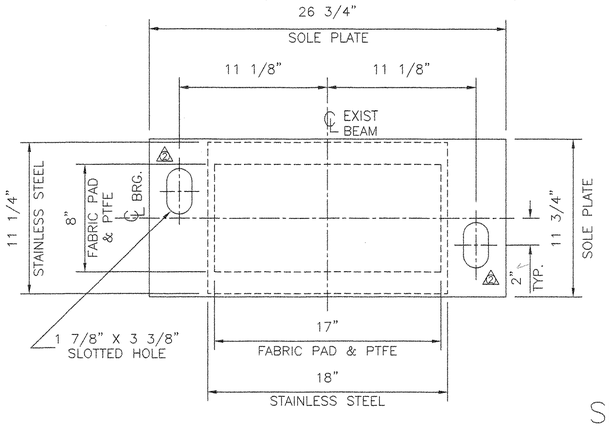
SIDE ELEVATION

SOLE PLATE ONLY
B16–B20



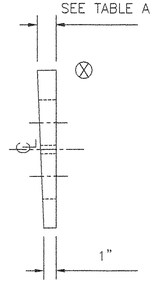
DETAIL A

N.T.S.



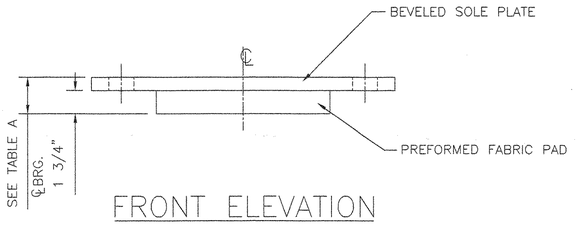
PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B41–B45 PIER 4 SPAN 5
QUANTITY: 5



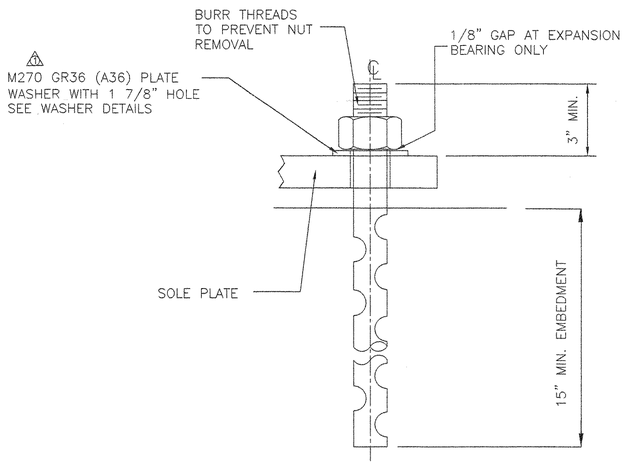
SIDE ELEVATION

SOLE PLATE ONLY
B41–B45



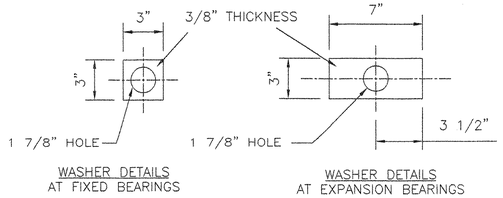
FRONT ELEVATION

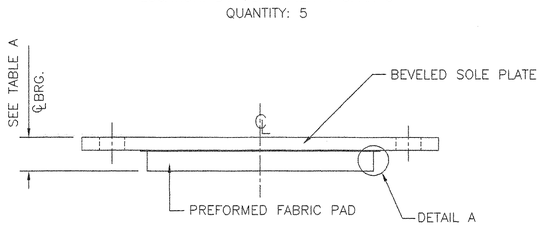
B16–B20



ANCHOR BOLT DETAIL

N.T.S ⚠1
1' 10" X 1 1/2" DIA AASHTO M183 SWEDGED ANCHOR BOLT, ONE M270 GR36 (A36) PLATE WASHER AND ONE HEAVY HEX NUT ALL GALVANIZED





FRONT ELEVATION

B41–B45

NOTES:
1. SEE SHEET 1
2. TABLE A LOCATED ON SHEET 1

VENDOR SUBMITTAL REVIEW

REVIEW STATUS: APPROVED; APPROVED AS REVISED; REJECTED
CONTRACTOR ACTION: NONE; CONFIRM; RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS OF TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY [signature] DATE 7/30/03

STATE OF VERMONT
AGENCY OF TRANSPORTATION
PROJECT NO. IM 091–1(36)
BRIDGE 38
HIGHWAY NO. I–91
TOWN OF HARTLAND

087

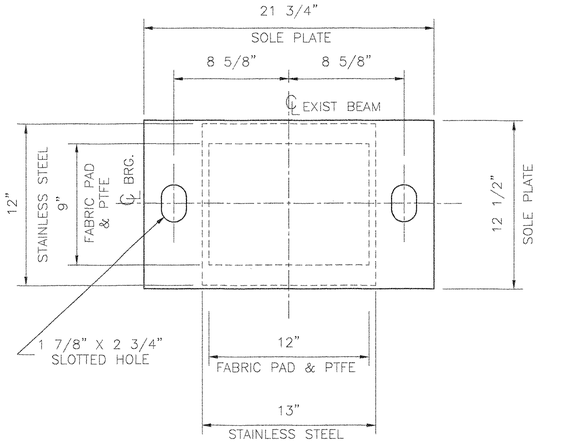
REV.	DESCRIPTION	BY	DATE	CHECKED	DATE
⚠2	CHANGED HOLE LOCATIONS FOR B41–B45 PIER 4 SPAN 5	MK	7/22/03	MCM	7/22/03
⚠1	ADDED WELD PROC. + BOND PROC., M270 GR36, AASHTO M183 WAS A36	MK	7/15/03	NH	7/15/03

COSMEC, INC.
70 SOUTH STREET
WALPOLE, MA. 02081

SCALE:	DRAWN BY:	DATE:	CHECK BY:	DATE:
3/16"=1"	MK	6/17/03	RFC	6/30/03

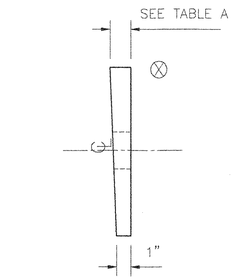
PREFORMED FABRIC PAD BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
FRANK W. WHITCOMB	59856	3898	2



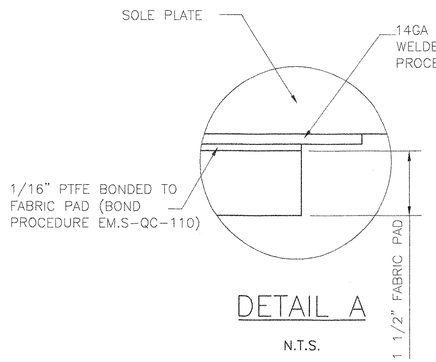
PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B6–B10
QUANTITY: 5



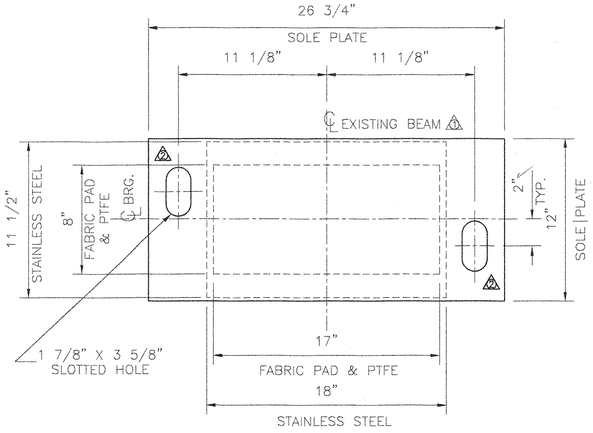
SIDE ELEVATION

SOLE PLATE ONLY
LOCATION: B6–B10



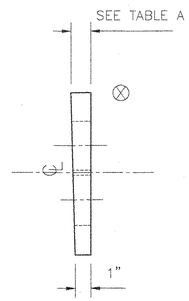
DETAIL A

N.T.S.



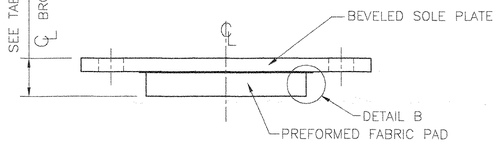
PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B36–B40 PIER 4, SPAN 4
QUANTITY: 5



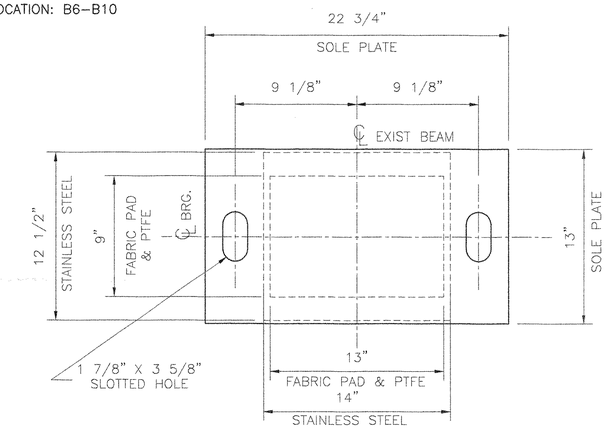
SIDE ELEVATION

SOLE PLATE ONLY
LOCATION: B36–B40



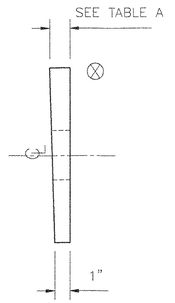
FRONT ELEVATION

LOCATION: B6–B10



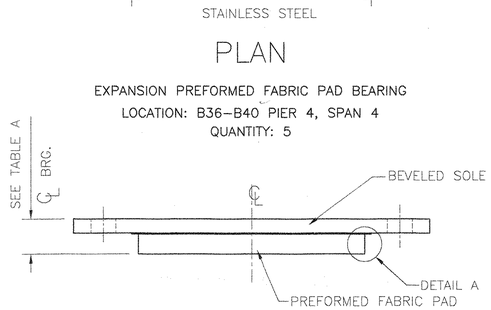
PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B11–B15
QUANTITY: 5



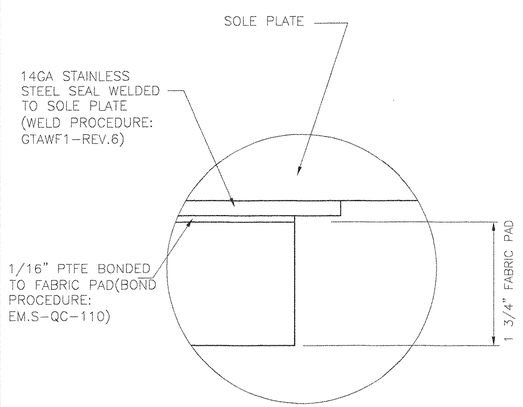
SIDE ELEVATION

SOEL PLATE ONLY
LOCATION: B11–B15



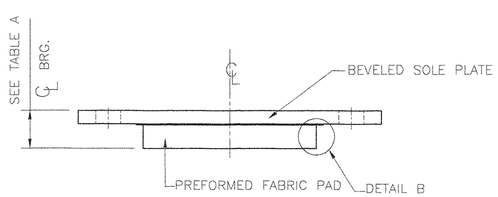
FRONT ELEVATION

LOCATION: B36–B40



DETAIL B

N.T.S.



FRONT ELEVATION

LOCATION: B11–B15

NOTES:
1. SEE SHEET 1
2. TABLE A LOCATED ON SHEET 1

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS AND DEPARTURES THEREON. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.
BY: [signature] DATE 29 Jul 03

STATE OF VERMONT
AGENCY OF TRANSPORTATION
PROJECT NO. IM 091–1 (36)
BRIDGE 38
HIGHWAY NO. I–91
TOWN OF HARTLAND
SHEET 3 OF 3

033

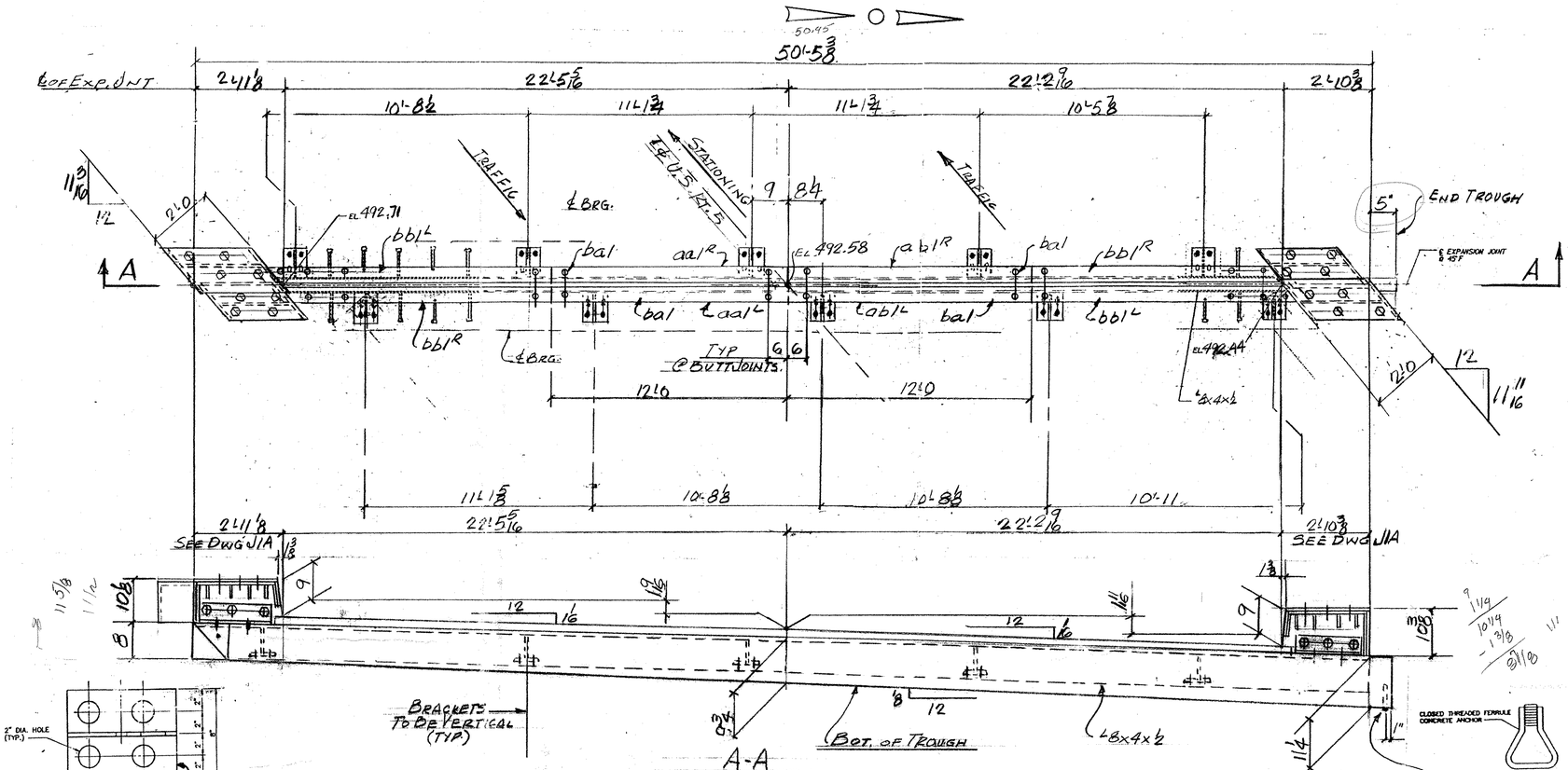
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 3/16"=1"	DRAWN BY: MK	DATE: 6/17/03	CHECK BY: RFC	DATE: 6/30/03

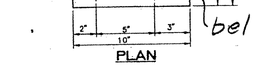
PREFORMED FABRIC PAD BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
FRANK W. WHITCOMB	59856	3899	2

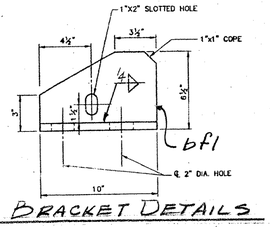
REV.		BY	DATE	CHECKED	DATE
2	CHANGED HOLE LOCATIONS FOR B36–40 PIER 4 SPAN 4	MK	7/22/03	MCM	7/22/03
1	ADDED "EXCISTNG BEAM"	MK	7/15/03	NH	7/15/03



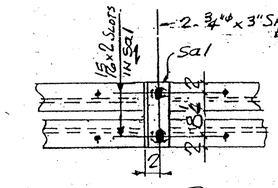
EXP. JOINT EJ1 - ONE REQ'D (@ PIER 1)



PLAN

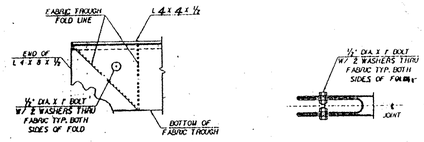


BRACKET DETAILS

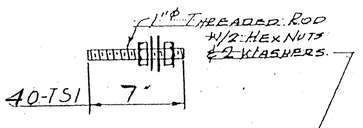


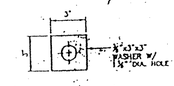
SHIPPING DEVICE
SPACED 5'-0" OC. MAX. (9 REQ'D)

TROUGH SHALL BE SLOPED TOWARD LOW SIDE OF BRIDGE (right to left, opposite that of the joint) AT 1% FOR POSITIVE DRAINAGE

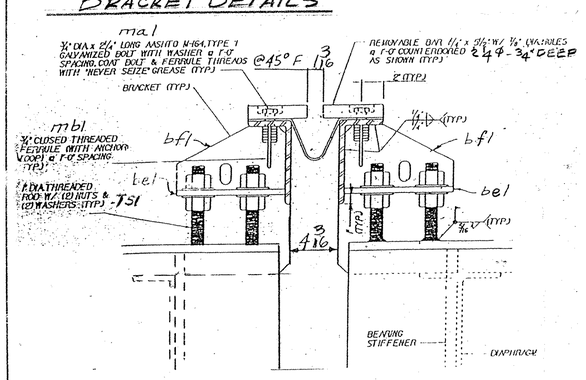


FOLDED TROUGH END DETAILS

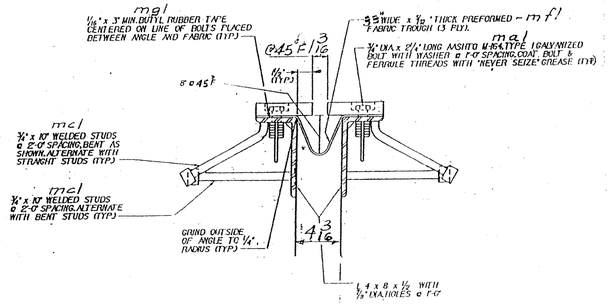




WASHER FOR BRACKET W1



TYP. SECTION @ GIRDERS



TYP. SECT. BETWEEN GIRDERS

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED APPROVED AS REVISED REJECTED	NONE CONFIRM RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING VENDOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS OR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS, FOR COORDINATION OF ALL TRADES, FOR SELECTED FABRICATION PROCESSES AND TECHNIQUES, AND FOR SAFETY PRECAUTIONS AND PROGRAMS IN PERFORMING HIS WORK. IT IS A DATE STAMPER.

BY Bruce L DATE 10/09/03

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

ABM INFO

SHOP BILL

JOB NO. 198 — DRG. NO. J1

PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	EXP. JOINT ASS'Y	51	0±		EJ1		—
		1	L 8 X 4 X 1/2	25	9	aa1R			
		1	DO	25	4	aa1L			
		1	DO	25	4	ab1R			
		1	DO	25	9	ab1L			
		4	BAR 1/4 X 5 1/2	12	0	ba1			
		2	DO	10	11±	bb1R			
		2	DO	10	8±	bb1L			
		10	PL 1/2 X 8		10	be1			
		10	PL 1/2 X 6		10	bf1			
		128	3/4"ø H.S. BOLTS		2 4	ma1			
		128	3/4"ø CLOSED THREADED ANC. FERRULES			mb1			
		122	3/4"ø OVAL STUDS		10	mc1			
		1	PREFORMED FABRIC SI 32 x 33	52	0	mf1		3 PLY PER CHEMFAST 7020 W/ NUT & WASHERS	
		2	1/2" ø M. BOLT		1	SHOP			
	40		1"ø THREADED RODS		7		TS1		
		80	1"ø HEX NUTS			SHOP			
		80	BAR 3 X 3/8		3	W1			
		9	L 4 X 4 X 3/8	1	0 4	sa1			
		18	3/4"ø H.S. BOLTS		3	SA0F			
		2	BUTYL RUBBER TAPE 1/4 X 3"	52	0	mg1		AASHTO M-198 TYPE B	
		2	PL 3/8 X 13 1/2	4	1±	cp1			
		2	PL 3/8 X 6 5/8	1	7 3/4	cp1a			
		1	PL 3/8 X 8 1/2	1	7 3/4	cp1b			
		1	PL 3/8 X 9 1/2	1	7 3/4	cp1c			
		2	PL 3/8 X 12 1/2	3	11±	cp2			
		2	PL 3/8 X 6 1/4	1	6 3/8	cp2a			
		1	PL 3/8 X 8 1/8	1	6 3/8	cp2b			
		1	PL 3/8 X 9 1/8	1	6 3/8	cp2c			
		2	PL 3/8 X 9 3/4	3	10±	cp3			
		2	PL 3/8 X 6 1/2	1	2 4	cp3a			
		1	PL 3/8 X 8 1/8	1	2 4	cp3b			
		1	PL 3/8 X 9 1/8	1	2 4	cp3c			
		2	PL 3/8 X 9 3/4	3	5 1/2	cp4			
		2	PL 3/8 X 5 7/8	1	2	cp4a			
		1	PL 3/8 X 7 3/4	1	2	cp4b			
		1	PL 3/8 X 8 3/4	1	2	cp4c			
		1	PL 3/8 X 9	2	8 3/8	cp5			
		1	PL 3/8 X 8 5/8	2	7 3/8	cp6			
		1	PL 3/8 X 9 3/8	2	7	cp7			
		1	PL 3/8 X 9	2	8	cp8			
		16	BAR 5 3/8 X 3/8		5 3/8	sp1			
		16	BAR 4 X 3/8		4	sp2			
		4	L 4 X 4 X 3/8	2	0	a1			
		12	3/4"ø H.S. BOLTS		2	mh1		W/ NUT & WASHER	

PAY ITEM 516.10

OUT FOR APPROVAL	6-04-03										
OUT FOR APPROVAL Final	8-4-03										
ISSUED TO SHOP											
FIELD & OFFICE											
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. IM-091-1(36) — STATE BRIDGE NO. 38

MATERIAL AASHTO M270-Gr36 — ELECTRODES: PER PROC. — HOLES: AS NOTED — SHOP BOLTS: 3/4"ø

SURFACE PREP. & PAINT: M-164-GALV. TYPE I

GALV. AFTER FAB (ASTM-A123)

Rec'd 9-19-03

DESCRIPTION: EXP. JOINT - PIER 1

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

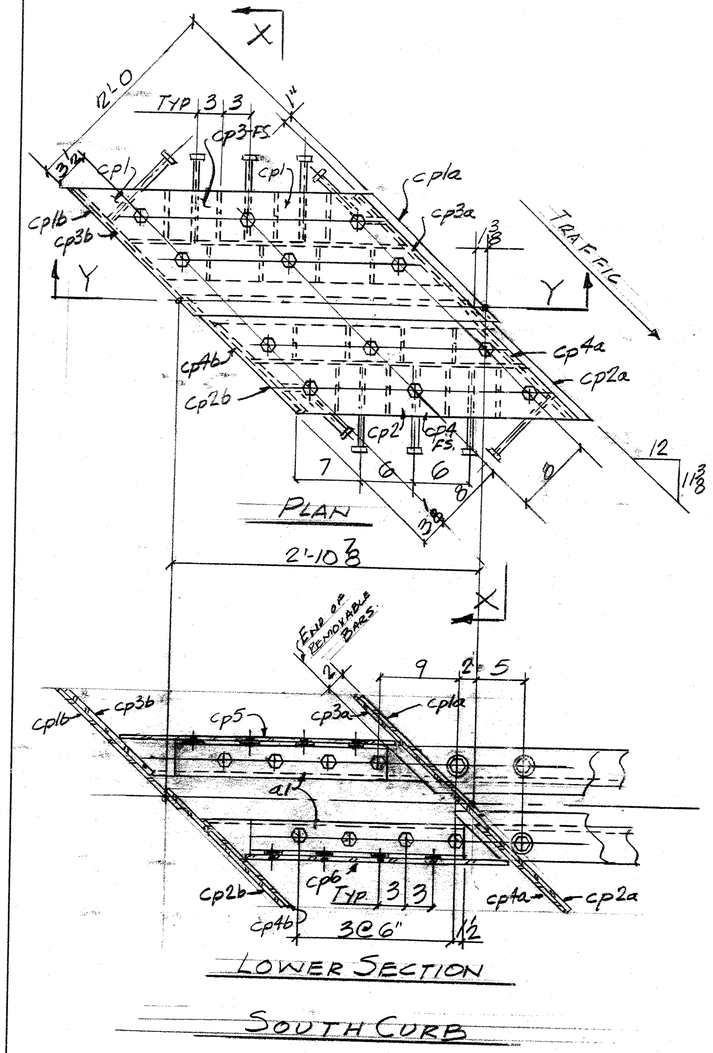
CUSTOMER: F.W. WHITCOMB

DRAWN BY	JPF	DATE 6-03
CHKD BY	EJ	(2)
APPROV BY		
Q.A.		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7350 FAX. (207) 282-1179

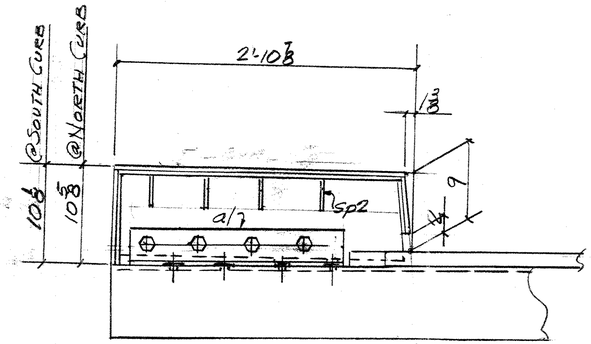
JOB NO. 198 — DRG. NO. J1 — REV. △ 089

JOB NO. 198 | DRG. NO. J1A



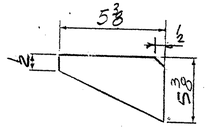
LOWER SECTION

SOUTH CURB

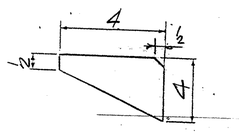


Y-Y - AS SHOWN

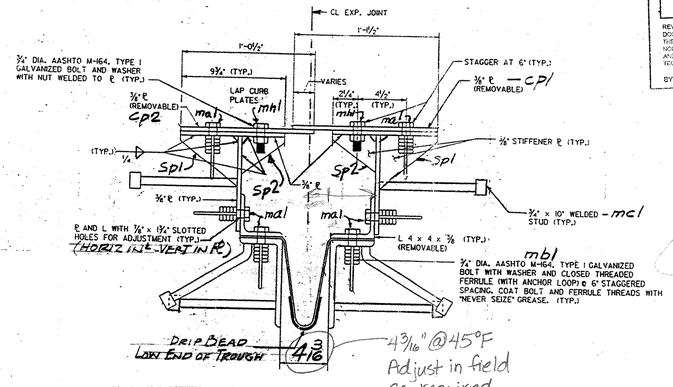
Y'-Y' - OPP HAND.



STIFFENER PLATE - sp1



STIFFENER PLATE - sp2



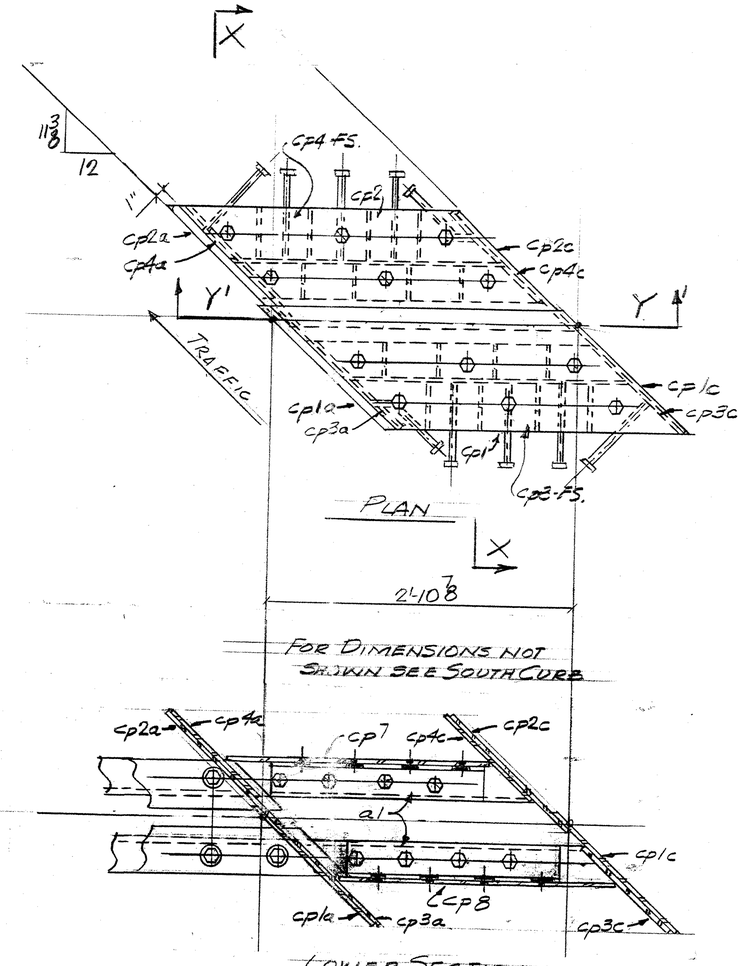
X-X

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY Martha Skeis DATE 7/15/03



FOR DIMENSIONS NOT SHOWN SEE SOUTH CURB

LOWER SECTION

NORTH CURB

OUT FOR APPROVAL	6-24-03									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270-Gr36 ELECTRODES: PER PROC. HOLES: AS NOTED SHOP BOLTS: ¾" ø M-164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 1

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

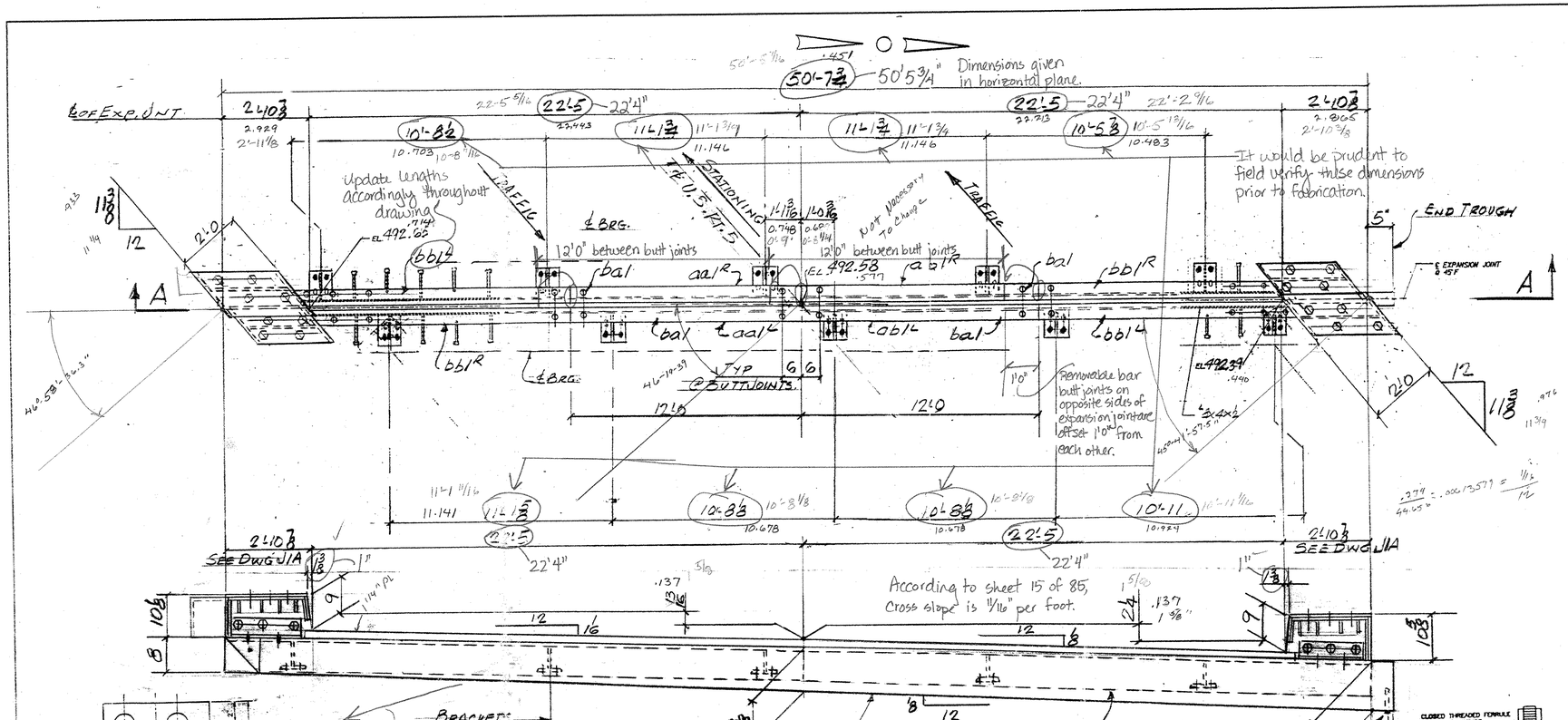
CUSTOMER: F.W. WHITCOMB

	DRAWN BY	DATE
	JPF	6-03
CHKD BY	EJ	
APPROV BY		
Q.A.		
JOB NO.	198	
DRG. NO.	J1A	
REV.	090	△

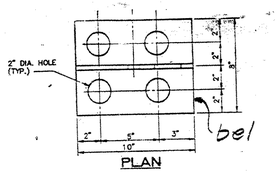
CASCO BAY STEEL STRUCTURES, INC.

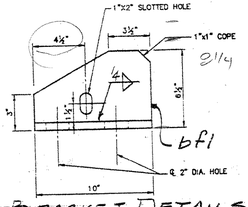
75 SPRING HILL ROAD SACO, MAINE 04072

PHONE (207) 282-7360 FAX. (207) 282-1179



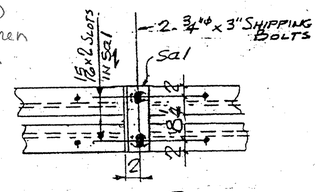
EXP. JOINT EJI - ONE REQ'D (@ PIER 1)





BRACKET DETAILS

Trough shall slope towards low side of bridge. Low side, when looking upstation, is to the left.



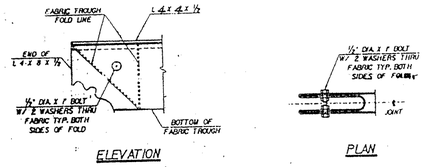
SHIPPING DEVICE
SPACED 540. OC. MAX. (9 REQ'D)

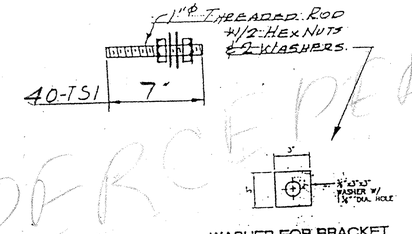
VENDOR SUBMITTAL REVIEW

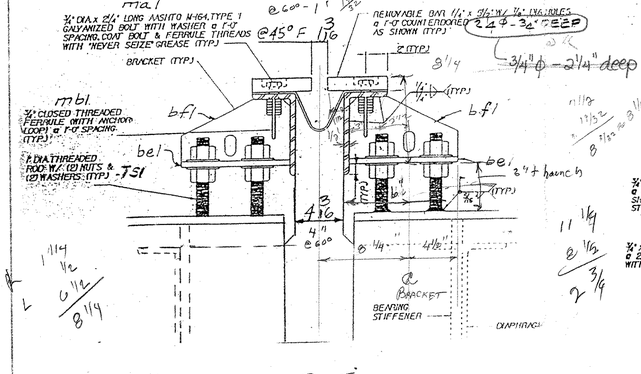
REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND ENDORSING, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

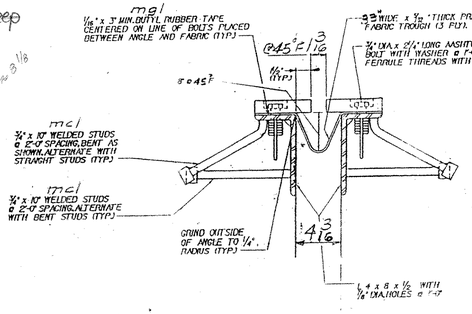
BY Martha Shaw DATE 7/15/03







TYP. SECTION @ GIRDERS



TYP. SECT. BETWEEN GIRDERS

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

SUPERCEDED

SHOP BILL

JOB NO. 198 DRG. NO. J1

PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	EXP. JOINT ASS'Y	51	0#		EJ1		—
		1	L 8x4 x 1/2	25	9	aa1R			
		1	DO	25	4	aa1L			
		1	DO	25	4	ab1R			
		1	DO	25	9	ab1L			
		4	BAR 1/4 x 5 1/2	12	0	ba1			
		2	DO	10	8	bb1R			
		2	DO	11	2	bb1L			
		10	PL 1/2 x 8		10	be1			
		10	PL 1/2 x 6		10	bf1			
		128	3/4"ϕ H.S. BOLTS		2 1/2	ma1			
		128	3/4"ϕ CLOSED THREADED FERRULES AND ANCHORS			mb1			
		122	3/4"ϕ ANC. STUDS		10	mc1			
		1	PREFORMED FABRIC 9"x3'-3"	52	0	mf1		3 PLY PER SUBSECT. 714(7) OF SPEC.	
		2	1/2" M. BOLT		1	SHOP		2 WASHERS	
		40	1"ϕ THREADED RODS		7		TS1		
		80	1"ϕ HEX NUTS			SHOP			
		80	BAR 3x3/8		3	wi			
		9	L 4x4 x 3/8	1	0 1/2	sa1			
		18	3/4"ϕ H.S. BOLTS		3	SHOP			
		2	BUTYL RUBBER TAPE 1/16 x 3"	52	0	mg1		AASHTO M-198 TYPE B	
		2	PL 3/8 X 13 1/2	3	11 3/4	cp1			
		2	PL 3/8 X 6 5/8	1	7 1/4	cp1a			
		1	PL 3/8 X 8 1/2	1	7 1/4	cp1b			
		1	PL 3/8 X 9 3/4	1	7 1/2	cp1c			
		2	PL 3/8 X 12 1/2	3	10 3/4	cp2			
		2	PL 3/8 X 6 1/4	1	5 3/4	cp2a			
		1	PL 3/8 X 8 1/8	1	5 3/4	cp2b			
		1	PL 3/8 X 9 3/8	1	5 3/4	cp2c			
		2	PL 3/8 X 9 3/4	3	6 1/2	cp3			
		2	PL 3/8 X 6 1/2	1	1 3/4	cp3a			
		1	PL 3/8 X 8 1/8	1	1 3/4	cp3b			
		1	PL 3/8 X 9 3/8	1	1 3/4	cp3c			
		2	PL 3/8 X 9 3/4	3	5 1/2	cp4			
		2	PL 3/8 X 5 7/8	1	1 3/4	cp4a			
		1	PL 3/8 X 7 3/4	1	1 3/4	cp4b			
		1	PL 3/8 X 9	1	1 3/4	cp4c			
		1	PL 3/8 X 9	2	8 1/2	cp5			
		1	PL 3/8 X 8 3/8	2	7 1/2	cp6			
		1	PL 3/8 X 9 3/8	2	7 1/2	cp7			
		1	PL 3/8 X 9	2	8 1/2	cp8			
		16	BAR 5/8 X 3/8		5/8	sp1			
		16	BAR 4X 3/8		4	sp2			
		4	L 4 x 4 x 3/8	2	0	a1			
		12	3/4"ϕ H.S BOLTS		2	mb1		W/ NUT & 1 WASHER	

PAY ITEM 516.10

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	6-03									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270-Gr36 ELECTRODES: PER PROC. HOLES: AS NOTED SHOP BOLTS: 3/4"ϕ M-164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 1

JOB: SUPERCEDED SUS ROUTE 5 OVER I-91 HARTLAND, VT.

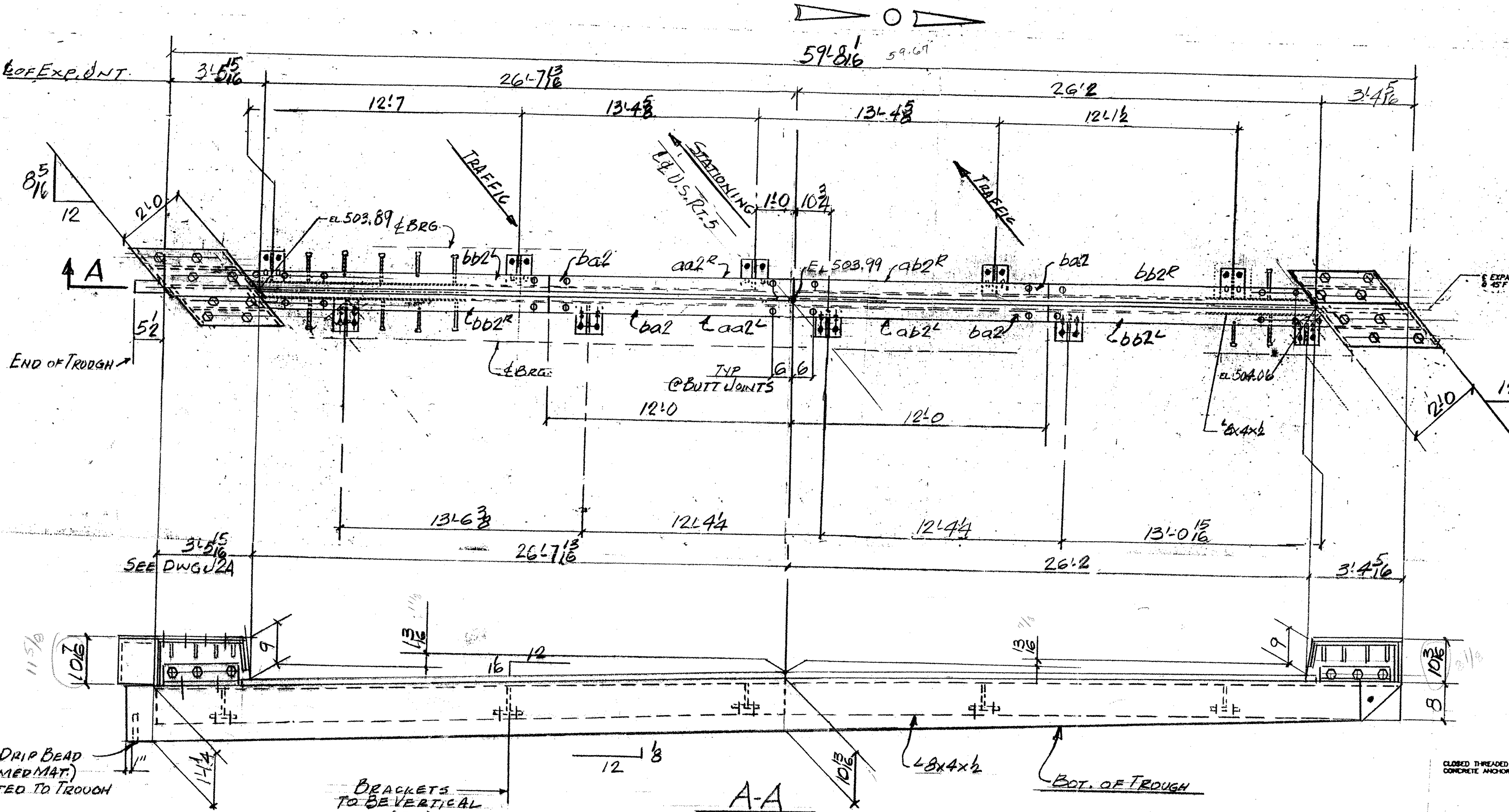
CUSTOMER: F.W. WHITCOMB SUPERCEDED

DRAWN BY	DATE
JPF	6-03
CHKD BY	
APPROV BY	
Q.A.	

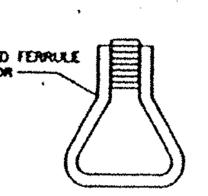
CASCO BAY STEEL STRUCTURES, INC.

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

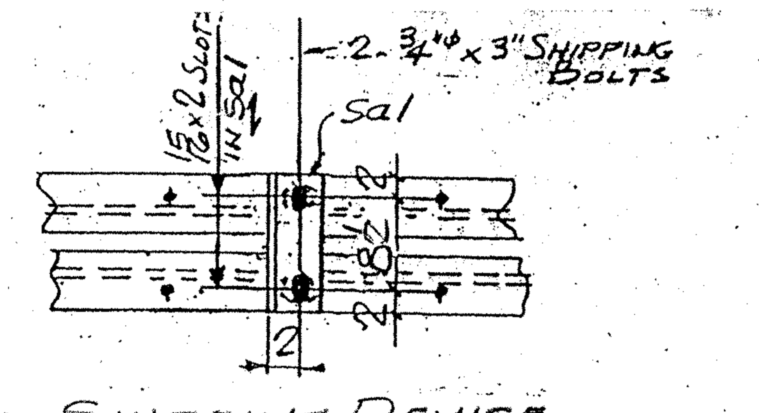
JOB NO. 198 DRG. NO. J1 REV. 091 △



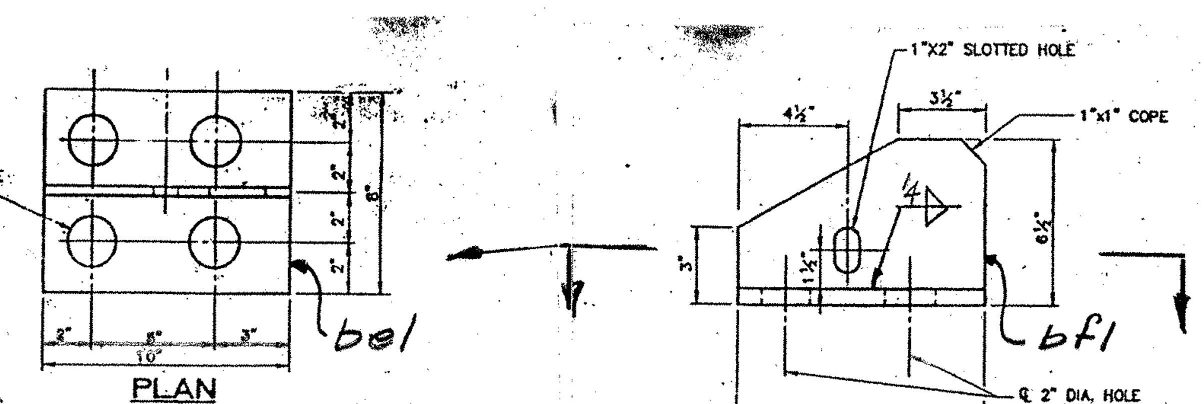
EXP. JOINT - EJ2 - ONE REQ'D (@ PIER 4)



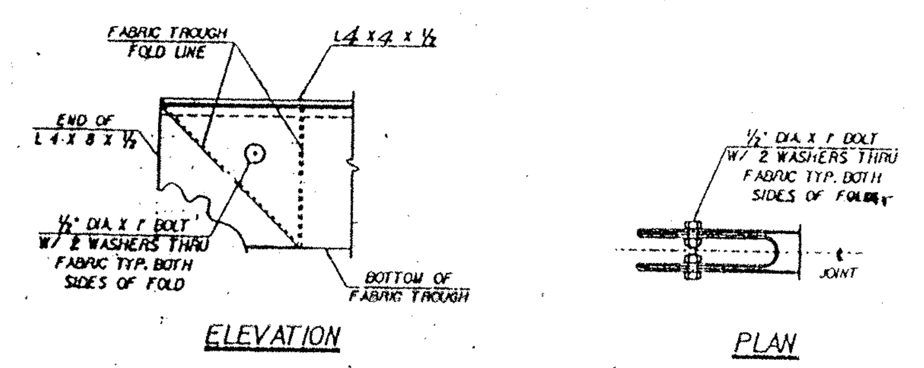
ANCHOR FERRULE DETAIL



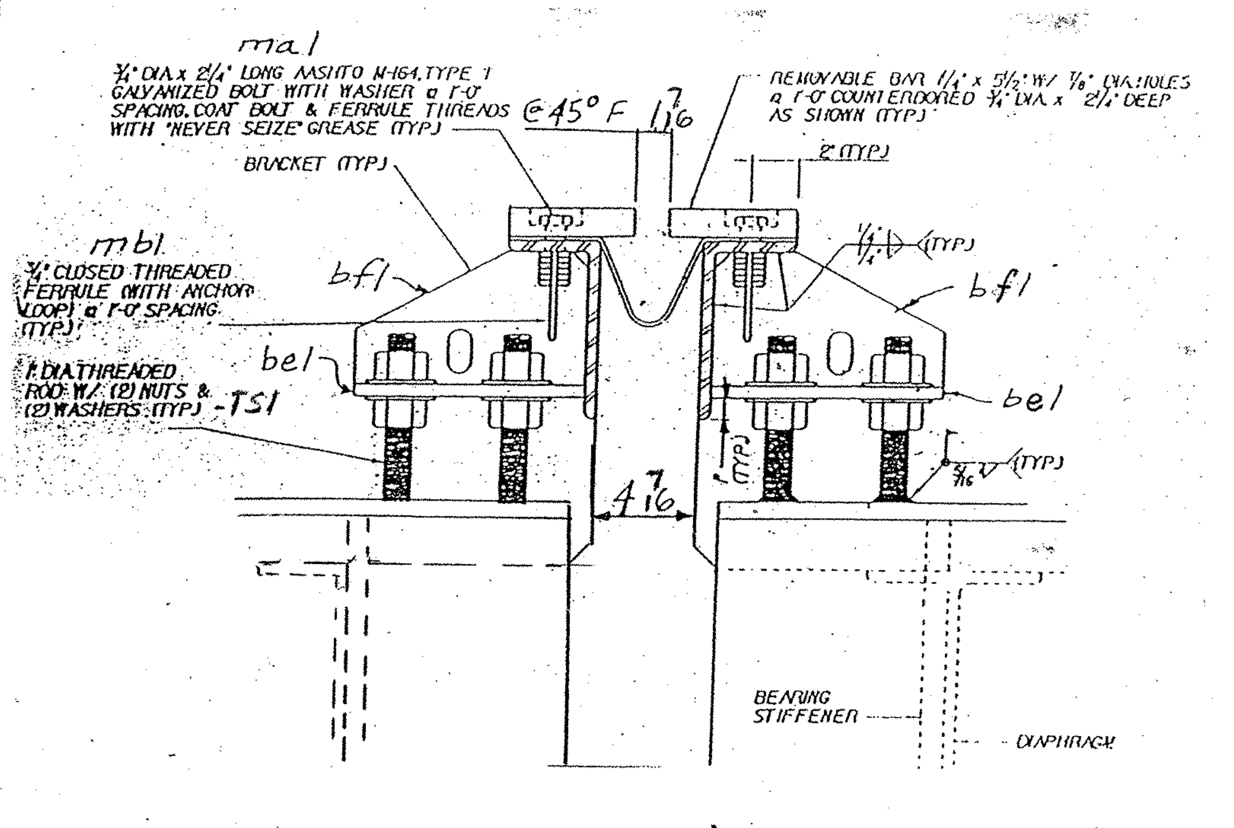
SHIPPING DEVICE
SPACED 5'-0" O.C. MAX. (11 REQ'D)



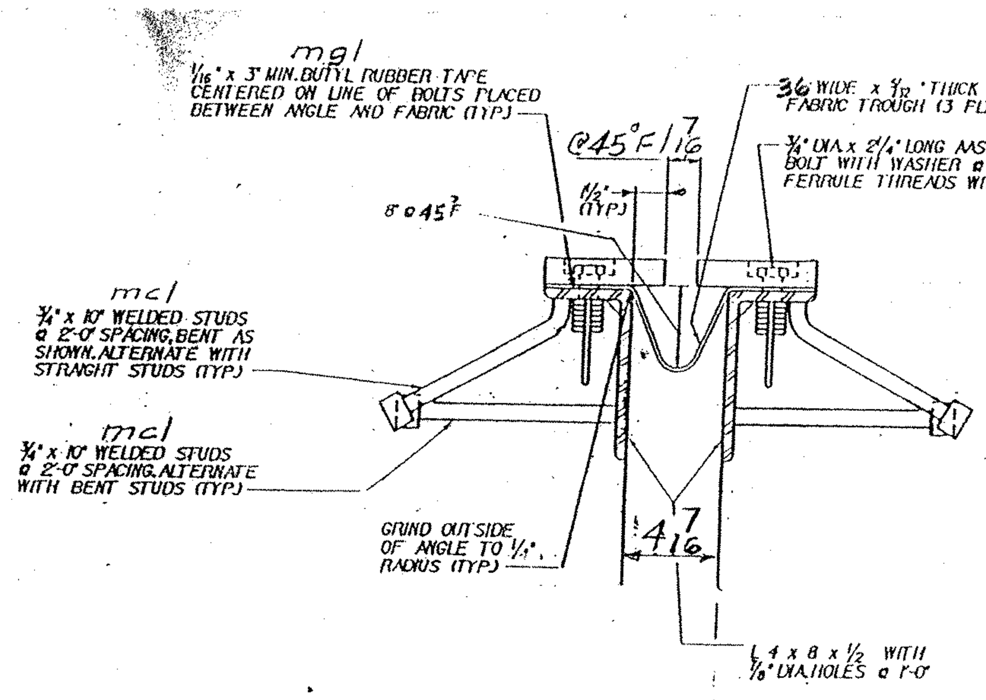
BRACKET DETAILS



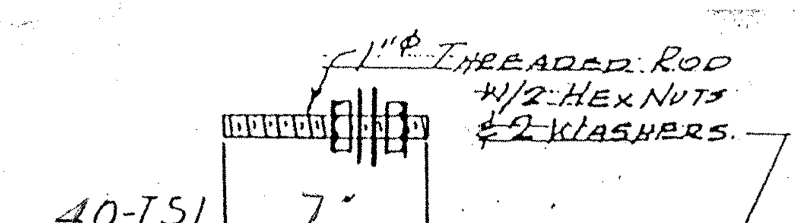
FOLDED TROUGH END DETAILS

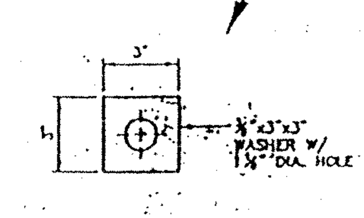


TYP. SECTION @ GIRDERS



TYP. SECT. BETWEEN GIRDERS





WASHER FOR BRACKET
W1

VENDOR SUBMITTAL REVIEW

REVIEW STATUS
APPROVED
APPROVED AS REVISED
REJECTED

CONTRACTOR ACTION
NONE
CONFIRM
RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY [signature] DATE 12AUG03

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

SHOP BILL

ABM INFO — JOB NO. 198 — DRG. NO. J2

PAGE	LINE	NO.		DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1		EXP. JOINT ASS'Y	61	0±		EJ2		—
			1	∠8x4x1/2	30	2 1/2	aa2R			
			1	DO	30	0	aa2L			
			1	DO	30	0	ab2R			
			1	DO	30	2 1/2	ab2L			
			4	BAR 1 1/4 x 5 1/2	12	0	ba2			
			2	DO	14	10±	bb2R			
			2	DO	15	6±	bb2L			
			10	PL 1/2 x 8		10	be1			
			10	PL 1/2 x 6		10	bf1			
			106	3/4"φ H.S. BOLTS		2 1/4	ma1			
			106	3/4"φ CLOSED THREADED ANC. FERRULES			mb1			
			120	3/4"φ ANC. STUDS		10	mc1			
			1	PREFORMED FABRIC 5/32 x 36	61	0	mf1		3PLY PER SUBSECT. 707.07	
			2	BUTYL RUBBER TAPE 1/16 x 3	61	0	mg1		AASHTO M.198-TYPE B	
			2	1/2"φ m. BOLT		1	SHOP		W/ NUT & 2 WASHERS	
		40		1"φ THREADED RODS		7		TS1		
			80	1"φ HEX NUTS			SHOP			
			80	BAR 3 x 3/8		3	W1			
			11	∠4x4x3/8	1	0 1/2	sa1			
			22	3/4"φ HS. BOLTS		3	SHOP			
			2	PL 3/8 x 13 1/2	5	0±	cp11			
			2	PL 3/8 x 6 5/8	1	11 3/4	cp11a			
			1	PL 3/8 x 10	1	11 3/4	cp11b			
			1	PL 3/8 x 9 13/16	1	11 3/8	cp11c			
			2	PL 3/8 x 12 1/2	4	10±	cp12			
			2	PL 3/8 x 6 1/4	1	10	cp12a			
			1	PL 3/8 x 9 5/16	1	10	cp12b			
			1	PL 3/8 x 9	1	10	cp12c			
			2	PL 3/8 x 9 3/4	4	6±	cp13			
			2	PL 3/8 x 6 1/4	1	5	cp13a			
			1	PL 3/8 x 9 1/16	1	5	cp13b			
			1	PL 3/8 x 9 7/16	1	5	cp13c			
			2	PL 3/8 x 9 3/4	4	4 1/2	cp14			
			2	PL 3/8 x 5 7/8	1	5	cp14a			
			1	PL 3/8 x 9	1	5	cp14b			
			1	PL 3/8 x 8 13/16	1	5	cp14c			
			1	PL 3/8 x 9 1/4	3	3 1/4	cp15			
			1	PL 3/8 x 8 7/8	3	1 7/8	cp16			
			1	PL 3/8 x 8 7/8	3	0 3/8	cp17			
			1	PL 3/8 x 9 1/4	3	1 3/4	cp18			
			16	BAR 5 3/8 x 3/8		5 3/8	sp1			
			16	BAR 4 x 3/8		4	sp2			
			4	∠4x4x3/8	2	3	a2			
			12	3/4"φ H.S. BOLTS		2	mh1		W/ NUT & WASHER	

PAY ITEM: 516.10

OUT FOR APPROVAL	6-24-03								
OUT FOR APPROVAL	[illegible] 8-4-03								
ISSUED TO SHOP									
FIELD & OFFICE									
REV. REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL: AASHTO M270-GR36 ELECTRODES: PER PROC HOLES: AS NOTED SHOP BOLTS: 3/4"φ M-164 TYPE I GALV

SURFACE PREP. & PAINT: GALV. AFTER FAB (ASTM-A123)

Rec'd 8-19-03

DESCRIPTION: EXP. JOINT - PIER 4

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

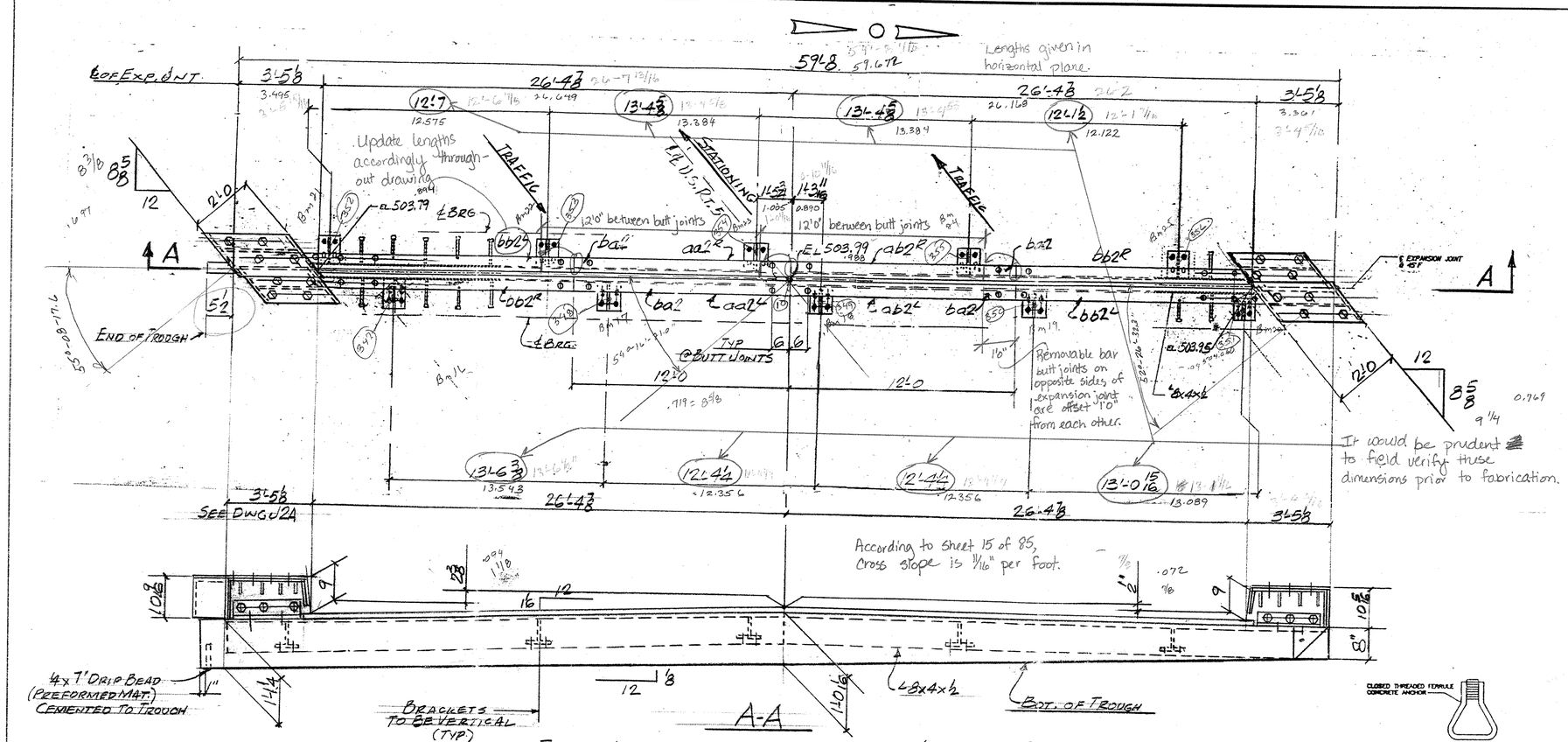
DRAWN BY: JPF — DATE: 6-03
CHKD BY: EJ
APPROV BY:
Q.A.

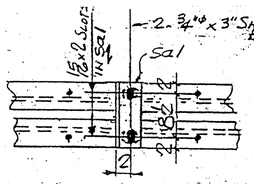
CUSTOMER: F. W. WHITCOMB

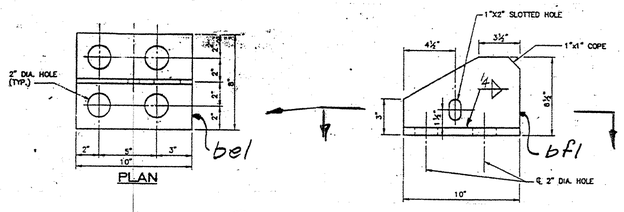
CASCO BAY STEEL STRUCTURES, INC.

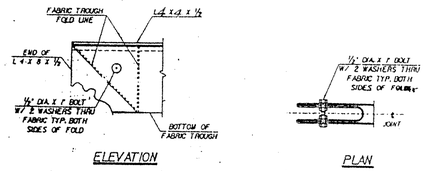
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

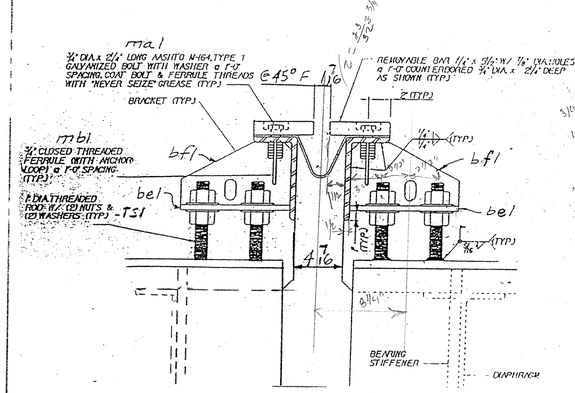
JOB NO. 198 — DRG. NO. J2 — 092 — REV 1

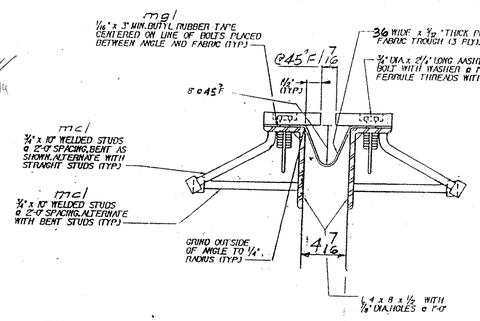


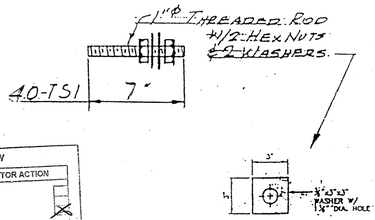












ABM INFO

SHOP BILL

JOB NO. 198 DRG. NO. J2

PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		/	EXP. JOINT ASS'Y	61	0	EJ	EJ 2		—
		1	L 8 X 4 X 1/2	30	2 1/2	aa2R			
		1	DO	29	10	aa2L			
		1	DO	29	10	ab2R			
		1	DO	30	2 1/2	ab2L			
		4	BAR 1/4 X 5 1/2	12	0	ba2			
		2	DO	14	9	bb2R			
		2	DO	15	6	bb2L			
		10	R 1/2 X 8	10		bf1			
		10	R 1/2 X 6	10		bf1			
		106	3/4"ø H.S. BOLTS		2	ma1			
		106	3/4"ø CLOSED THREADED FERRULES			mb1			
		120	3/4"ø ANC. STUDS		10	mc1			
		1	PREFORMED FABRIC 5126	61	0	mf1		3M# PER SUBSEQ. 707.07	
		2	BUTYL RUBBER FABRIC 1116	61	0	mg1		AASHTO M-198-76 TYPE B	
		2	1/2"ø M. BOLT		1	SHOP		W/ NUT & 2 WASHERS	
		40	1"ø THREADED RODS	(7)		TS1			
		80	1"ø HEX NUTS			SHOP			
		80	BAR 3 X 3/8		3	W1			
		11	L 4 X 4 X 3/8	1	10 1/2	sa1			
		22	3/4"ø HS. BOLTS		3	SHOP			
		2	R 3/8 X 13 1/2	4	10 3/8	cp11			
		2	R 3/8 X 6 3/8	1	11 3/8	cp11a			
		1	R 3/8 X 10 3/16	1	11 3/8	cp11b			
		1	R 3/8 X 9 15/16	1	11 3/8	cp11c			
		2	R 3/8 X 12 1/2	4	7 1/2	cp12			
		2	R 3/8 X 6 1/4	1	9 1/2	cp12a			
		1	R 3/8 X 9 7/16	1	9 1/2	cp12b			
		1	R 3/8 X 9 3/16	1	9 1/2	cp12c			
		2	R 3/8 X 9 3/4	4	3 3/8	cp13			
		2	R 3/8 X 6 1/4	1	4 3/8	cp13a			
		1	R 3/8 X 9 3/8	1	4 3/8	cp13b			
		1	R 3/8 X 9 7/16	1	4 3/8	cp13c			
		2	R 3/8 X 9 3/4	4	2 1/4	cp14			
		2	R 3/8 X 5 7/8	1	4 1/4	cp14a			
		1	R 3/8 X 9 3/16	1	4 1/4	cp14b			
		1	R 3/8 X 8 15/16	1	4 1/4	cp14c			
		1	R 3/8 X 9 1/4	3	2 1/2	cp15			
		1	R 3/8 X 8 3/8	3	1/8	cp16			
		1	R 3/8 X 8 3/8	3	1/8	cp17			
		1	R 3/8 X 9 1/4	3	2 1/2	cp18			
		16	BAR 5 3/8 X 3/8		5 3/8	sp1			
		16	BAR 4 X 3/8		4	sp2			
		4	L 4 X 4 X 3/8	2	3	a2			
		12	3/4"ø H.S. BOLTS		2	mb1		W/ NUT & WASHER	AASHTO M-164 TYPE I

PAY ITEM: 516.10

OUT FOR APPROVAL	6/24/03 JB
OUT FOR APPROVAL	
ISSUED TO SHOP	
FIELD & OFFICE	

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT.	TYPE	WASHER

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL: ~~AASHTO~~ M270 GR 36 ELECTRODES: PER PROC HOLES: AS NOTED SHOP BOLTS:

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 4

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

CUSTOMER: F.W. WHITCOMB

	DRAWN BY	DATE
	JPF	6-03
CHKD BY		
APPROV BY		
Q.A.		

CASCO BAY STEEL STRUCTURES, INC.

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
198	J2
093	REV. 1

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

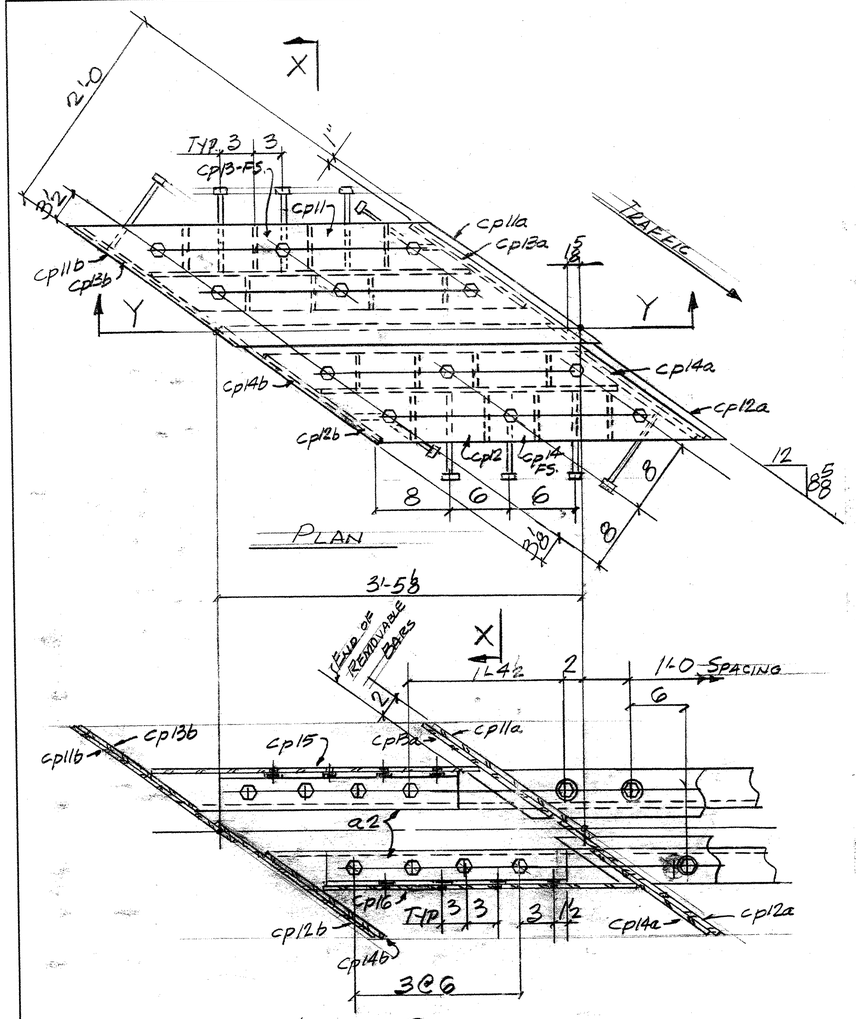
REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR ASSEMBLIES AND SUBASSEMBLIES, FOR SELECTING FABRICATION PROCESSES AND TECHNIQUES OF HANDLING, AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

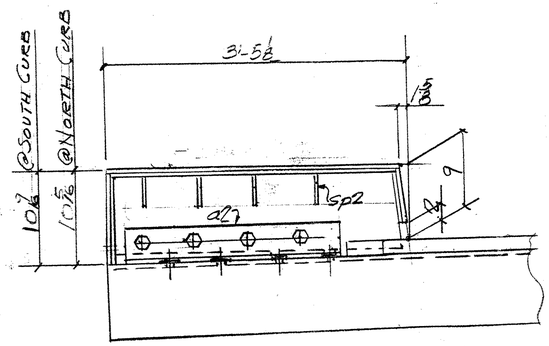
BY Martha Iten DATE 7/15/03

SUPERSEDED

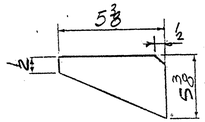
ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

JOB NO. 198 | DRG. NO. J2A

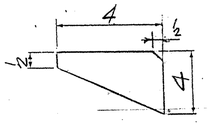




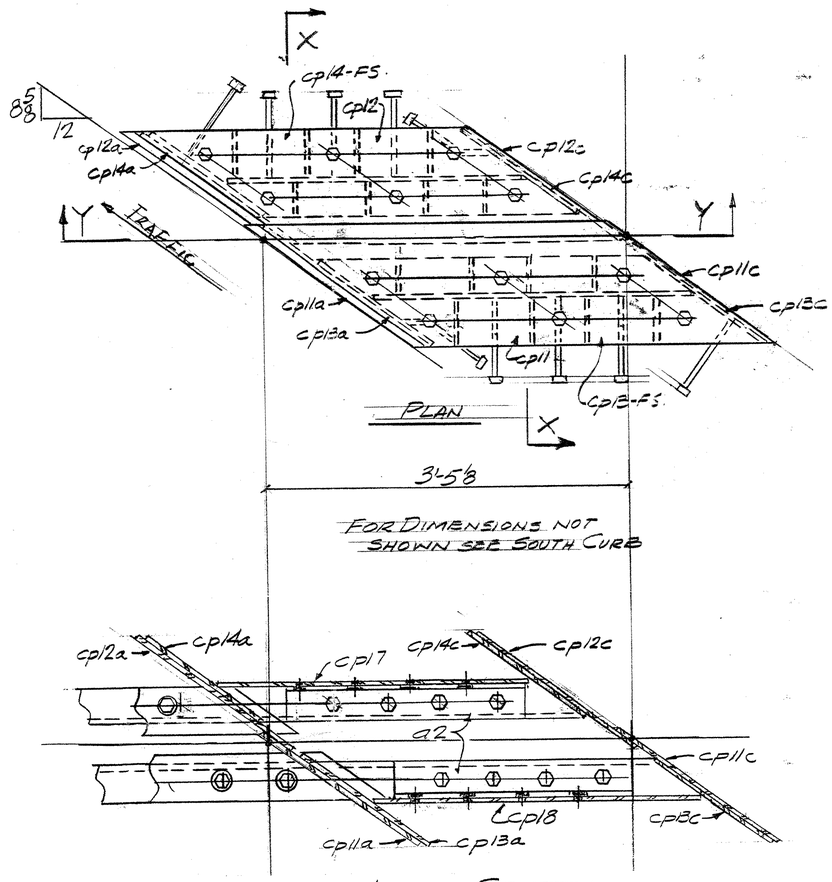
Y-Y - AS SHOWN
Y'-Y' - OPP HAND.



STIFFENER PLATE - SP1

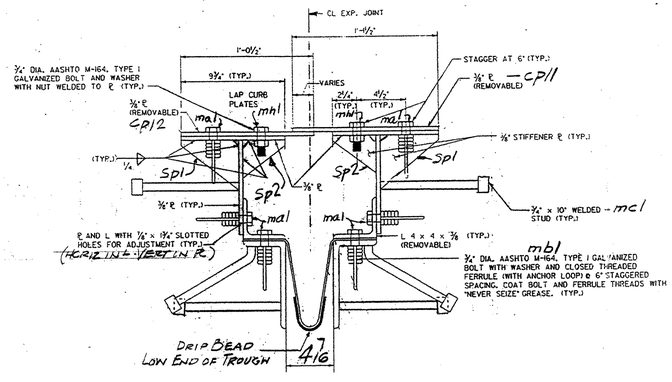


STIFFENER PLATE - SP2



FOR DIMENSIONS NOT SHOWN SEE SOUTH CURB

LOWER SECTION
NORTH CURB



X-X

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED APPROVED AS REVISED REJECTED	NONE CONFIRM RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER

BY Martha Klein DATE 7/15/03

OUT FOR APPROVAL	6-24-03									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. IM-091-1 (36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270 GR36 | ELECTRODES: PER PROC | HOLES: AS NOTED | SHOP BOLTS: 3/4" ø M164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 4

JOB:

US ROUTE 5
OVER I-91
HARTLAND, VT.

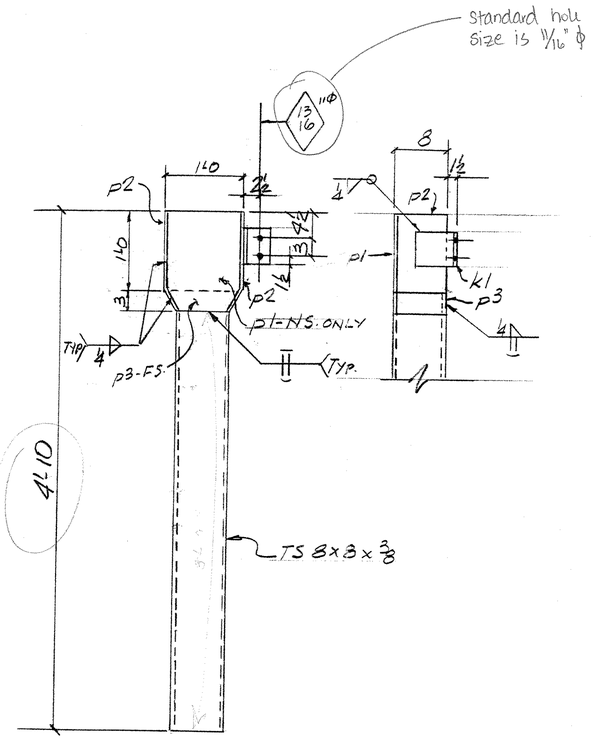
CUSTOMER: F.W. WHITCOMB

	DRAWN BY	DATE
	JPF	6-03
CHKD BY	EJ	
APPROV BY		
Q.A.		

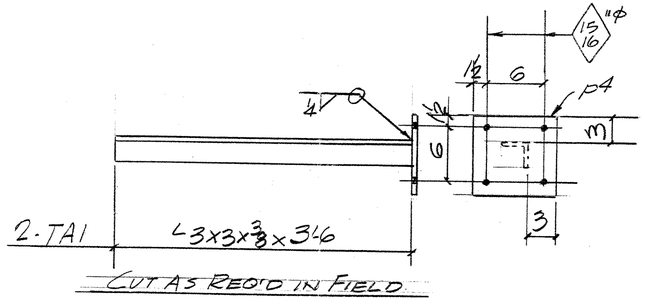
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
198	J2A
094	REV. △

ABM INFO		SHOP BILL						JOB NO. 198	DRG. NO. M1
PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		2	TS 8x8x3/8	3	7		DS1	ASTM A-500 or A-501	
			2 PL 3/8x11/4	1	3	P1			
			4 PL 3/8 x 7 3/8	1	3 3/8	P2		BEND	
			2 PL 3/8 x 3		11/4	P3			
			2 L 6x4x1/2		6	K1			
		2	L 3x3x3/8	3	6		TA1		
			2 PL 3/8 x 9		9	P4			
		4	3/4" HIT HY-150 SYSTEM (GALV. PER SUBSEC. T 506.15)		8		FIELD	HILTI INC.	
			PAY ITEM 506.60						



DS1 - 2 REQ'D.



VENDOR SUBMITTAL REVIEW

REVIEW STATUS: APPROVED / APPROVED AS REVISED / REJECTED

CONTRACTOR ACTION: NONE / CONFIRM / RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY Martha Klein DATE 7/15/03

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	6-24-03									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270 GR 36 ELECTRODES: PER PROC HOLES: AS NOTED SHOP BOLTS: —

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: DOWNSPOUTS PIERS 1 & 4

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

CUSTOMER: F.W. WHITCOMB

	DRAWN BY	DATE
	JPF	6-03
CHKD BY	EJ	
APPROV BY		
Q.A.		

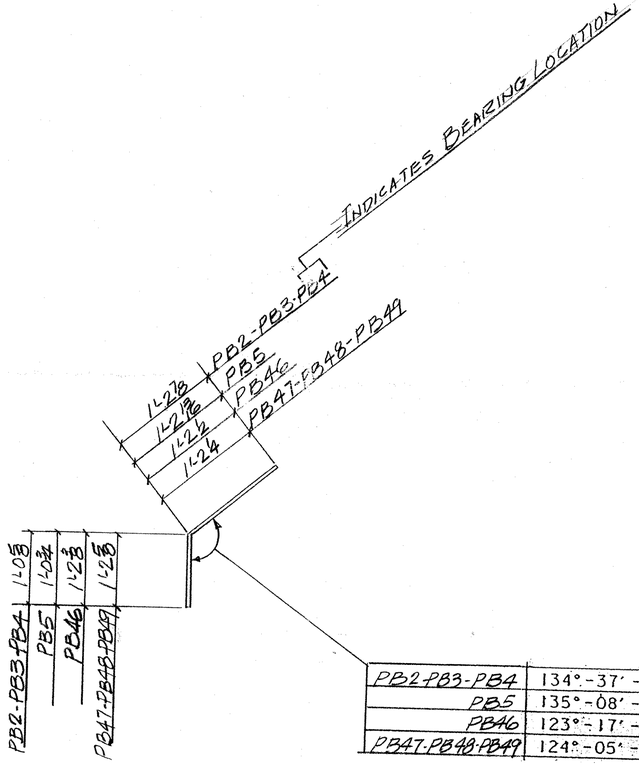
CASCO BAY STEEL STRUCTURES, INC.

75 SPRING HILL ROAD SACO, MAINE 04072

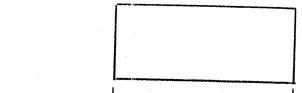
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
198	M1
095	REV. △

ABM INFO		SHOP BILL						JOB NO. 198	DRG. NO. M12
PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	PL 4 x 10 3/8	2	0 3/8		PB1		
		1	DO	2	3 1/2		PB2	BEND	
		1	DO	2	3 1/2		PB3		
		1	PL 4 x 10	2	3 1/2		PB4		
		1	DO	2	3 7/16		PB5		
		1	PL 4 x 11 3/8	2	4 3/8		PB46		
		1	PL 4 x 10	2	4 3/8		PB47		
		1	PL 4 x 10 3/8	2	4 3/8		PB48		
		1	PL 4 x 9 3/4	2	4 3/8		PB49	BEND.	
		1	PL 4 x 9 3/8	1	10 3/16		PB50		
			PAY ITEM 506.60						



PB2-PB3-PB4	134°-37'-04.45"
PB5	135°-08'-37.22"
PB46	123°-17'-23.52"
PB47-PB48-PB49	124°-05'-00.02"



PB1	PL 4 x 10 3/8 x 2'-0 3/8"
PB50	PL 4 x 9 3/8 x 1'-10 3/16"

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. NOTATION OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURE THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND FOR SAFETY PRECAUTIONS AND PROCEDURES IN CONNECTION WITH THE WORK.

BY: [signature] DATE: 12 Aug 03

OUT FOR APPROVAL	10-21-03									
OUT FOR APPROVAL	11-18-03									
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL: AASHTO M270 GR36 ELECTRODES: — HOLES: — SHOP BOLTS: —

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

Rev'd 8-14-03

DESCRIPTION: BEAM END #'S - ABUTS. 1 & 2

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

CUSTOMER: F.W. WHITCOMB

	DRAWN BY	DATE
	JPF	6-03
CHKD BY	EJ	
APPROV BY		
Q.A.		

CASCO BAY STEEL STRUCTURES, INC.

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
198	M12
096	REV. △

ABM INFO

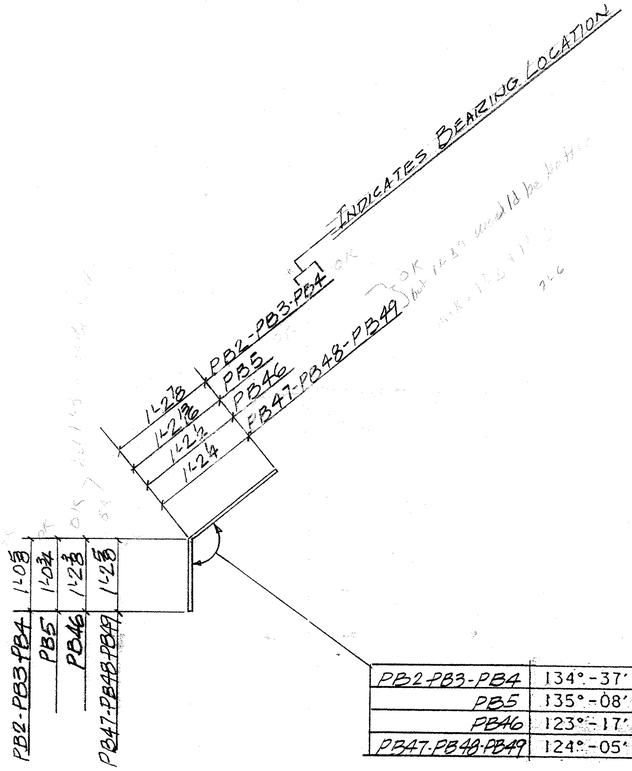
SHOP BILL

JOB NO. 198 | DRG. NO. M12

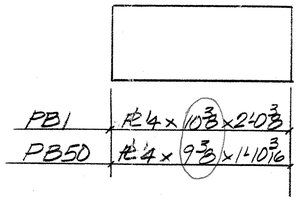
PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	R4x10 3/8	2	0 3/8		PB1		
		1	DO	2	3 1/2		PB2	BEND	
		1	DO	2	3 1/2		PB3		
		1	R4x10	2	3 1/2		PB4		
		1	DO	2	3 15/16		PB5		
		1	R4x11 1/8	2	4 3/8		PB46		
		1	R4x10	2	4 3/8		PB47		
		1	R4x10 5/8	2	4 5/8		PB48		
		1	R4x9 3/4	2	4 5/8		PB49	BEND.	
		1	R4x9 3/4	1	10 3/8		PB50		

RAY ITEM 506.60

Bearing height at centerline of bearing is 3.16" for B1-B5 and 2.66" for B46-B50. Verify with Contractor (J. Hollar of F. Whitcomb) that shim plates are not being used. Update heights accordingly.



PB2-PB3-PB4	134°-37'-04.45"
PB5	135°-08'-37.22"
PB46	123°-17'-23.52"
PB47-PB48-PB49	124°-05'-00.02"



VENDOR SUBMITTAL REVIEW

REVIEW STATUS		CONTRACTOR ACTION	
APPROVED		NONE	
APPROVED AS REVISED		CONFIRM	
REJECTED		RESUBMIT	X

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY Martha Reis DATE 7/15/03

Absolutely

VERIFY

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	10-24-03									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. IM-091-1 (36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270 Gr 36 ELECTRODES: — HOLES: — SHOP BOLTS: —

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: BEAM END PLATES - ABUTS. 1 & 2

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

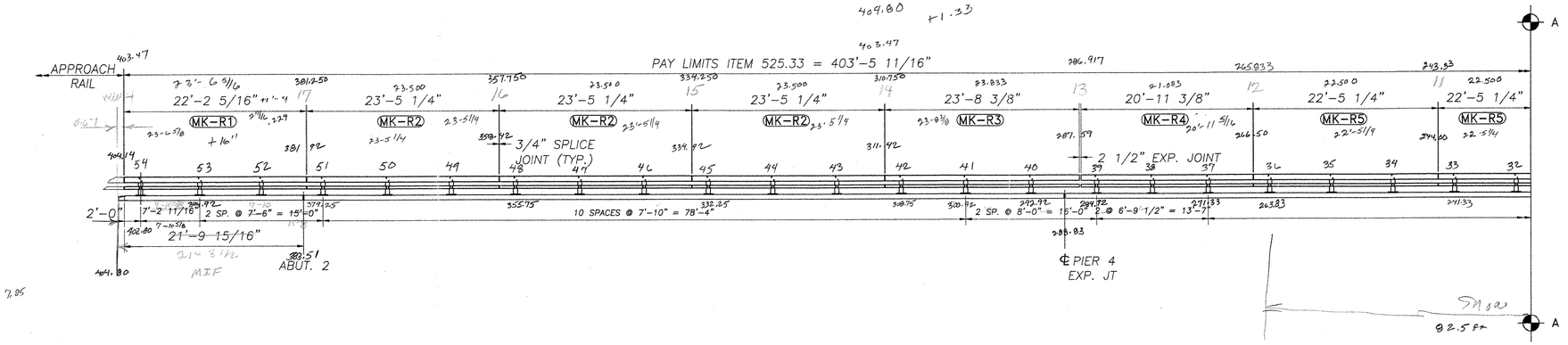
CUSTOMER: F.W. WHITCOMB

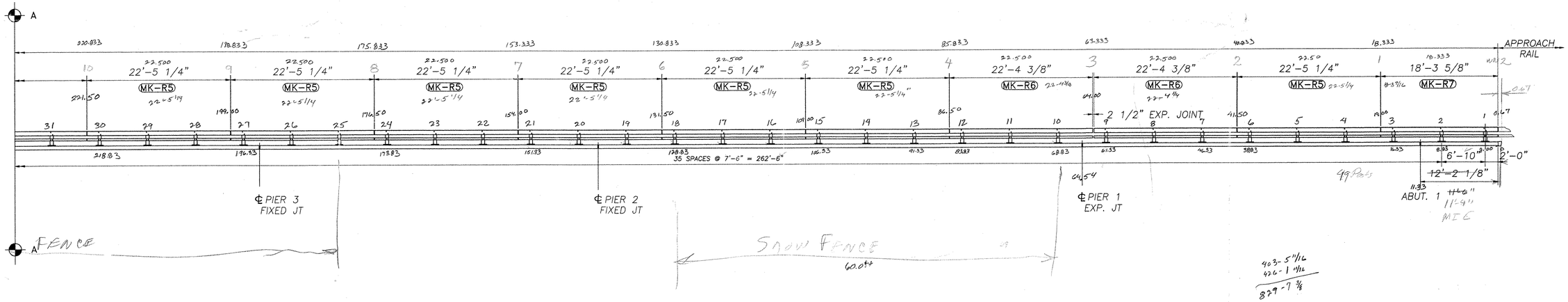
DRAWN BY	DATE
JPF	6-03
CHKD BY	
E.J.	
APPROV BY	
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
198	M12
097	REV. △





BILL OF MATERIAL (ITEM 563.22)					
Mk.	Qty.	Description	Size/Shape	length/qty. per unit	Material
P1	54	BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE			
	54	*POST UPRIGHT*	*W6 x 25*	*2'-03/8"*	*A709 Gr. 50*
	54	*POST BASE PLATE*	*1" x 10"*	*1'-2"*	*A709 Gr. 50*
S1	17	UPPER SPLICE TUBE FOR 8 x 4 RAIL			
	17	*TUBE*	*TS 7x3x3/8*	*1'-8"*	*A500 Gr. B*
	34	*LOCK NUTS*	*5/8"*	*2 pcs.*	*A563 Gr. DH*
S2	17	LOWER SPLICE TUBE FOR 4 x 4 RAIL			
	17	*TUBE*	*TS 3x3x5/16*	*1'-8"*	*A500 Gr. B*
	34	*LOCK NUTS*	*5/8"*	*2 pcs.*	*A563 Gr. DH*
R1	1	UPPER RAIL	TS 8x4x5/16	22'-2 5/16"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	22'-2 5/16"	A500 Gr. B
R2	3	UPPER RAIL	TS 8x4x5/16	23'-5 1/4"	A500 Gr. B
	3	LOWER RAIL	TS 4x4x1/4	23'-5 1/4"	A500 Gr. B
R3	1	UPPER RAIL	TS 8x4x5/16	23'-8 3/8"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	23'-8 3/8"	A500 Gr. B
R4	1	UPPER RAIL	TS 8x4x5/16	20'-11 3/8"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	20'-11 3/8"	A500 Gr. B
R5	9	UPPER RAIL	TS 8x4x5/16	22'-5 1/4"	A500 Gr. B
	9	LOWER RAIL	TS 4x4x1/4	22'-5 1/4"	A500 Gr. B
R6	2	UPPER RAIL	TS 8x4x5/16	22'-4 3/8"	A500 Gr. B
	2	LOWER RAIL	TS 4x4x1/4	22'-4 3/8"	A500 Gr. B
R7	1	UPPER RAIL	TS 8x4x5/16	18'-3 5/8"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	18'-3 5/8"	A500 Gr. B
*AP	54	ANCHOR PLATE	*3/8 x 9 3/8*	*1'-1"*	*A709 Gr. 36*
*AS	216	ANCHOR STUD	*1" DIA.*	*12"*	*A449*
*H1	432	HEX NUT	*1" DIA.*	*- - -*	*A563*
*H2	216	JAMB NUT	*1" DIA.*	*- - -*	*A563*
*H3	216	WASHER	*1" DIA.*	*- - -*	*F436*
H4	216	ROUND HEAD BOLT	*3/4" DIA.*	*6"*	*M164 TYPE 1*
H5	216	HEX NUT	*3/4" DIA.*	*- - -*	*A563*
H6	216	WASHER	*3/4" DIA.*	*- - -*	*F436*
H7	70	SPLICE BOLT	*5/8" DIA.*	*1 3/4"*	*M164 TYPE 1*
H8	70	WASHER	*5/8" DIA.*	*- - -*	*F436*
H9	16	PIPE SPACER (SCH. 40)	*3/4" DIA.*	*1/2"*	*A563*
BP	54	BEARING PAD	*1/8 x 10*	*1'-2"*	*M251*

* ANCHORS NOT PROVIDED BY HIGHWAY SAFETY CORP. – SHOWN FOR REFERENCE ONLY.

ELEVATON – NORTH–WEST BRIDGE RAIL Rt Side
FACING (NW) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 403'–5 11/16"

TOTAL PAY LIMIT ITEM (NORTH AND SOUTH RAIL)
ITEM 525.33 = 832'

VENDOR SUBMITTAL REVIEW
REVIEW STATUS: APPROVED / APPROVED AS REVISED / REJECTED
CONTRACTOR ACTION: NONE / CONFIRM / RESUBMIT
REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEVIATIONS THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER
BY ____ DATE 7/24/03

REVISIONS		
No.	Remarks	Date
0	Initial submittal	7/23/03

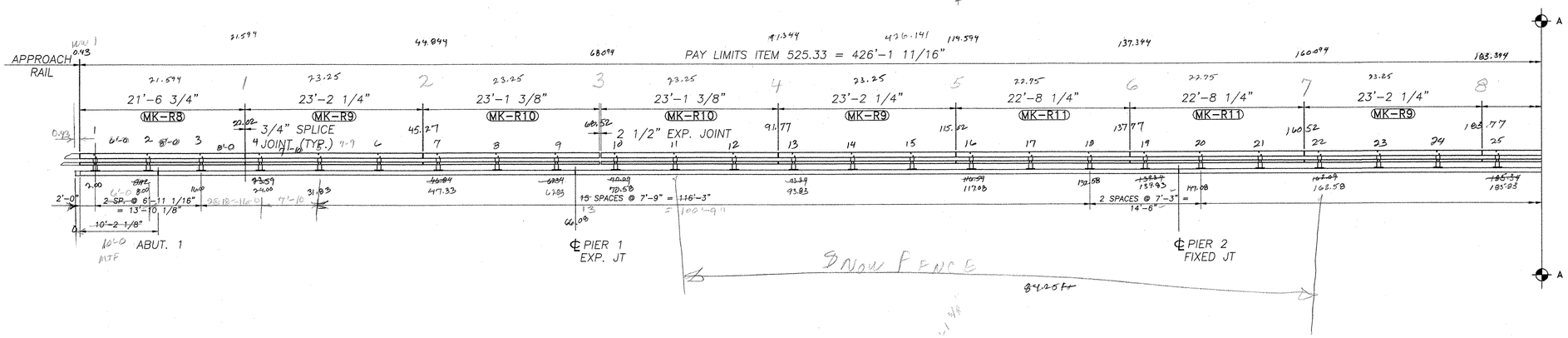
RECEIVED
CK'D BY ____ OK'D BY ____
JUL 30 2003
RESUBMIT ____ APPROVED ____
BY DATE

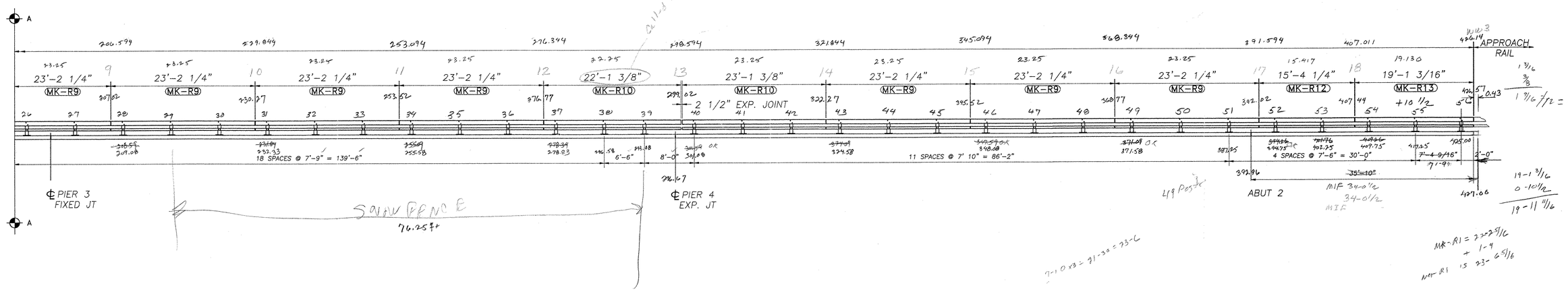
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 098
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE 1/8"=1'-0"
NSC REFERENCE NO. 1354
SIZE D REVISION 0
SHEET NO. 1 of 3





ELEVATON – SOUTH-EAST BRIDGE RAIL
FACING (SE) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 426'-1 11/16'

COGO DIST 426.141

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURE THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY, AND FOR PERFORMING HIS WORK IN A SAFE MANNER

BY _____ DATE 10/10/03

REVISIONS		
No.	Remarks	Date
0	Initial submittal	7/23/03

RECEIVED
CK'D BY _____ ORIG BY _____
JUL 30 2003
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

BILL OF MATERIAL (ITEM 563.22)					
Mk.	Qty.	Description	Size/Shape	length/qty. per unit	Material
P1	56	BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE			
	56	POST UPRIGHT	W6 x 25	2'-03/8"	A709 Gr. 50
	56	POST BASE PLATE	1" x 10"	1'-2"	A709 Gr. 50
S1	18	UPPER SPLICE TUBE FOR 8 x 4 RAIL			
	18	TUBE	TS 7x3x3/8	1'-8"	A500 Gr. B
	36	LOCK NUTS	5/8"	2 pcs.	M164 TYPE 1
S2	18	LOWER SPLICE TUBE FOR 4 x 4 RAIL			
	18	TUBE	TS 3x3x5/16	1'-8"	A500 Gr. B
	36	LOCK NUTS	5/8"	2 pcs.	A563M Gr. A
R8	1	UPPER RAIL	TS 8x4x5/16	21'-6 3/4"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	21'-6 3/4"	A500 Gr. B
R9	10	UPPER RAIL	TS 8x4x5/16	23'-2 1/4"	A500 Gr. B
	10	LOWER RAIL	TS 4x4x1/4	23'-2 1/4"	A500 Gr. B
R10	4	UPPER RAIL	TS 8x4x5/16	23'-1 3/8"	A500 Gr. B
	4	LOWER RAIL	TS 4x4x1/4	23'-1 3/8"	A500 Gr. B
R11	2	UPPER RAIL	TS 8x4x5/16	22'-8 1/4"	A500 Gr. B
	2	LOWER RAIL	TS 4x4x1/4	22'-8 1/4"	A500 Gr. B
R12	1	UPPER RAIL	TS 8x4x5/16	15'-4 1/4"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	15'-4 1/4"	A500 Gr. B
R13	1	UPPER RAIL	TS 8x4x5/16	19'-1 3/16"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	19'-1 3/16"	A500 Gr. B
*AP	56	ANCHOR PLATE	3/8 x 9 3/8	1'-1"	A709 Gr. 36
*AS	224	ANCHOR STUD	1" DIA.	12"	A449
*H1	448	HEX NUT	1" DIA.	– – –	A563
*H2	224	JAMB NUT	1" DIA.	– – –	A563
*H3	224	WASHER	1" DIA.	– – –	F436
H4	224	ROUND HEAD BOLT	3/4" DIA.	6"	M164 TYPE 1
H5	224	HEX NUT	3/4" DIA.	– – –	A563
H6	224	WASHER	3/4" DIA.	– – –	F436
H7	74	SPLICE BOLT	5/8" DIA.	1 3/4"	M164 TYPE 1
H8	74	WASHER	5/8" DIA.	– – –	F436
H9	16	PIPE SPACER (SCH. 40)	3/4" DIA.	1/2"	A563
BP	56	BEARING PAD	1/8 x 10	1'-2"	M251

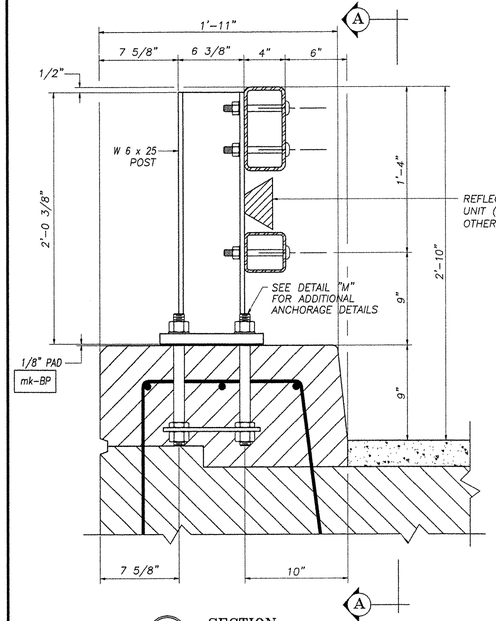
* ANCHORS NOT PROVIDED BY HIGHWAY SAFETY CORP. – SHOWN FOR REFERENCE ONLY.

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

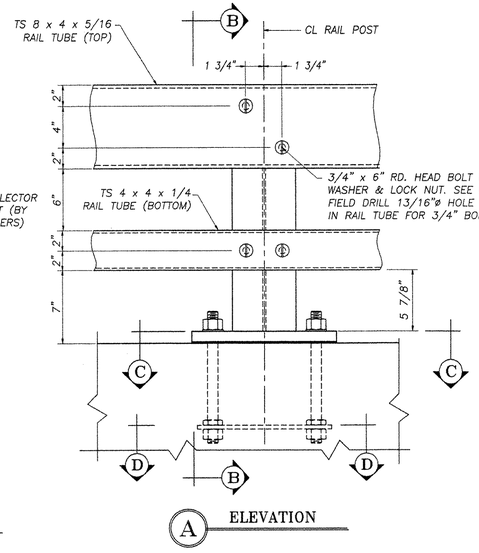
ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

DRAWN	MHM
CHECKED	
DATE	5-28-03
SCALE	1/8"=1'-0"
HSC REFERENCE NO.	1354
SIZE	D
REVISION	0
SHEET NO.	2 of 3

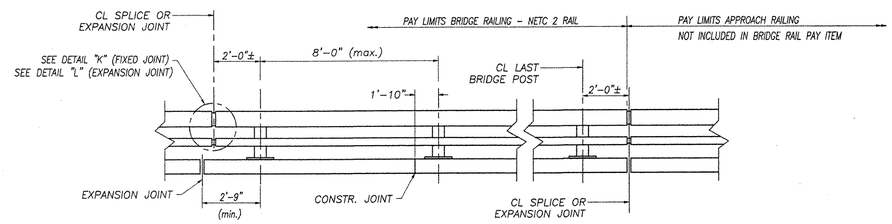
GENERAL CONTRACTOR 099
SUB CONTRACTOR F.R. Lafayette, Inc.



B SECTION
POST & CURB

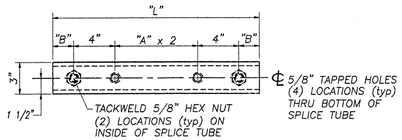


A ELEVATION

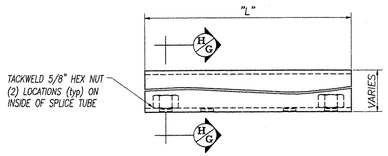


TYPICAL BRIDGE RAILING ELEVATION

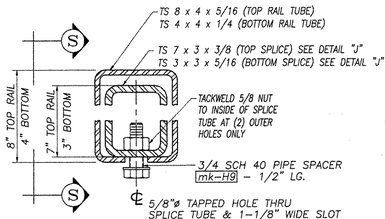
NOTE: SPLICE TUBES & HARDWARE FOR CONNECTION BETWEEN BRIDGE RAIL & BRIDGE APPROACH RAIL ARE INCLUDED IN APPROACH RAIL PAY ITEM, NOT INCLUDED UNDER BRIDGE RAIL ITEM 525.33



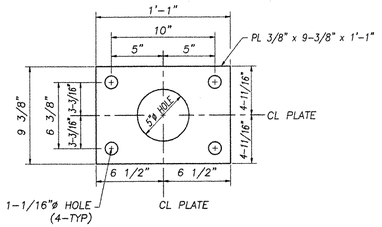
J DETAIL
SPLICE TUBE - BOTTOM VIEW
(SEE CHART FOR DIMENSIONS)



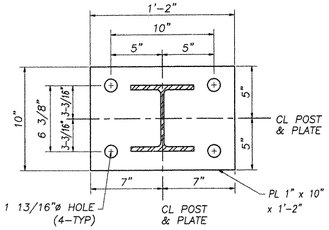
S SECTION
SPLICE TUBE ELEVATION



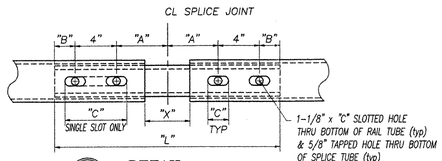
H SECTION
THRU EXPANSION SPLICE JOINT



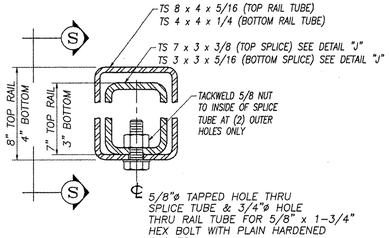
D SECTION
ANCHOR PALTE
mk-AP



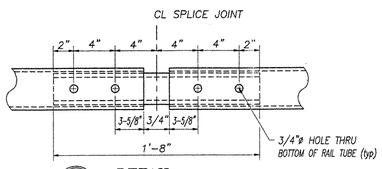
C SECTION
RAIL POST BASE PLATE
SEE DETAIL "F" FOR POST-BASE WELD



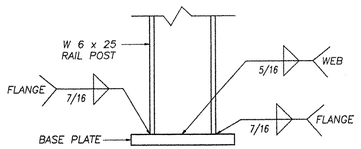
L DETAIL
EXPANSION JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY



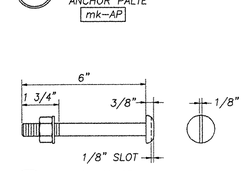
G SECTION
THRU FIXED SPLICE JOINT



K DETAIL
SPLICE JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY

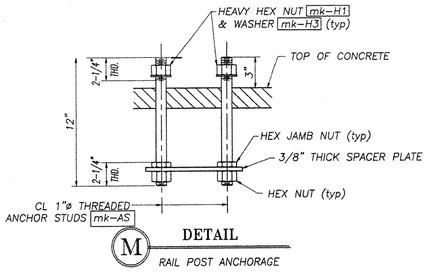


F DETAIL
POST-BASE WELD



E DETAIL
POST BOLT
mk-H4

3/4"ø M164 (TYPE I) ROUND HEAD BOLT WITH WASHER mk-H6 & LOCKNUT mk-H5 (typ) FOR ALL RAIL TO POST CONNECTIONS, THRU "FIELD-DRILLED" 13/16"ø HOLES IN RAIL TUBE



M DETAIL
RAIL POST ANCHORAGE

SPLICE & EXPANSION JOINT TABLE					
"T"	"A"	"B"	"C"	"L"	"X"
SPLICE	4"	2"	--	20"	3/4"
≤4"	4"	2"	2-1/2"	20"	2-1/2"
>4" ≤ 6-1/2"	5-1/2"	2-3/8"	3-1/2"	23-3/4"	4"
>6 1/2" ≤ 9"	6 1/2"	3 3/8"	9" *	27 3/4"	5"
>9" ≤ 13"	8 1/2"	4 3/8"	11" *	33-3/4"	7"

"T" = TOTAL REQUIRED MOVEMENT * = SINGLE SLOT

REVISIONS		
No.	Remarks	Date
0	Initial submittal	7/8/03

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY _____ DATE 14Aug03

GENERAL ERECTION NOTES

1. All work and materials shall conform to the provisions of Section 525 – Railings of the Vermont Standard Specifications for Construction.
2. Tubing & posts shall meet the requirements of Section 732 – Railing materials of the Standard Specifications for Construction.
3. All exposed cut or sheared edges shall be rounded to a 1/16" radius & be free of burrs.
4. Rail posts shall be set normal to grade.
5. Sections of rail bar shall be attached to a minimum of two (2) posts and preferebly to at least four (4) posts.
6. Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "X" at 45° F and will be adjusted in the field by the engineer.
7. All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.
8. Rail posts anchoring nuts shall be tightened to a snug-tight fit and given an additional 1/8 turn.
9. Rail bars shall be attached using 3/4"ø full diameter body head bolts AASHTO M164 (Type-I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.
10. Holes in rails for attachment to posts will be field-drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
11. Radiused rails (if required) will be shop-curved. No field-bending of rail tubes.
12. The drop-weight tear test in section 732 shall not apply to the structure tubing on this standard.
13. The rail posts & base plates shall be tested for impact properties in accordance with ASTM A370 Charpy Impact Testing, using a type A specimen.
14. All welds are to be cleaned prior to galvanizing to insure proper bonding of zinc to welded areas.

MATERIALS

Rail bars.....ASTM A500 GR B or ASTM A501
Rail posts.....ASTM A709 GR 50
All other shapes & plates.....ASTM A709 GR 36
Anchor studs.....ASTM A449
All other bolts [unless noted].....AASHTO M164, TYPE I

Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.

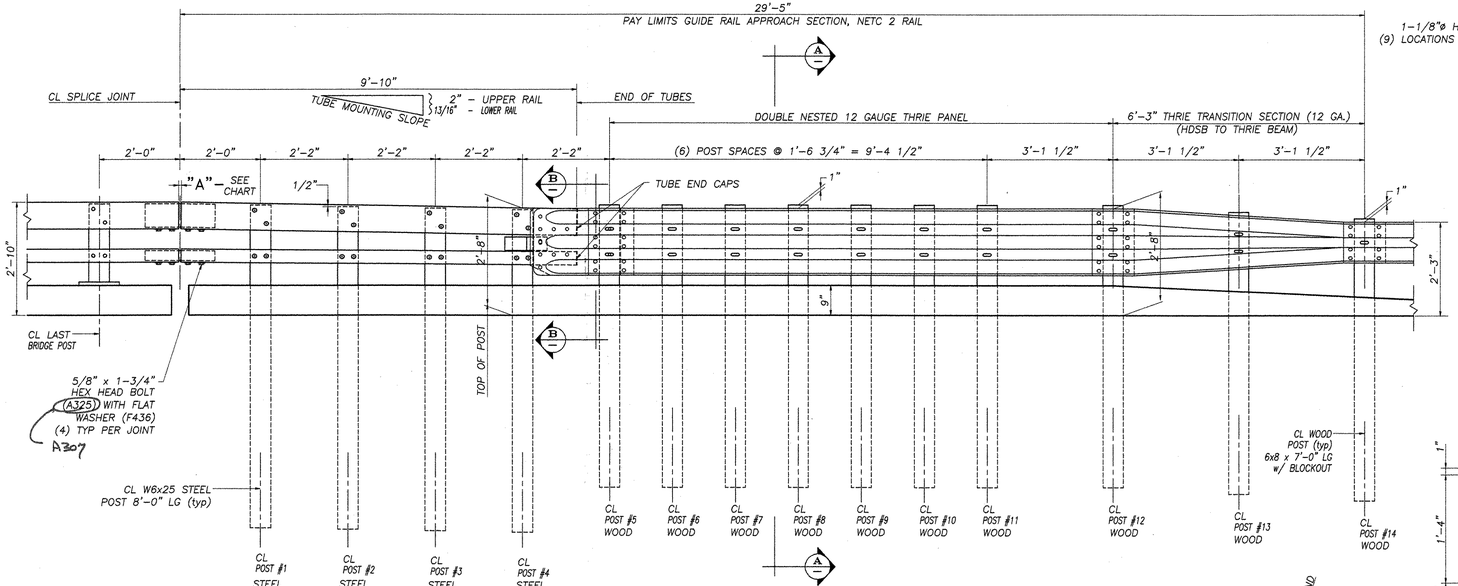
RECEIVED
JUL 30 2003
CK'D BY _____ OK'D BY _____
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 - BRIDGE RAILING - NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

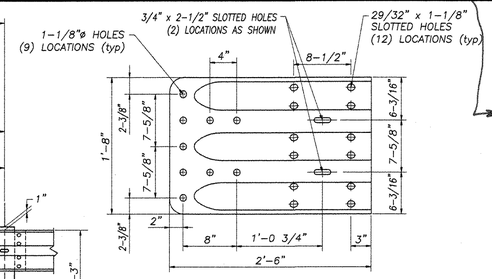
GENERAL CONTRACTOR 160
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE NONE
HSC REFERENCE NO. 1354
SIZE D REVISION
SHEET NO. 3 of 3



ELEVATION – APPROACH RAIL

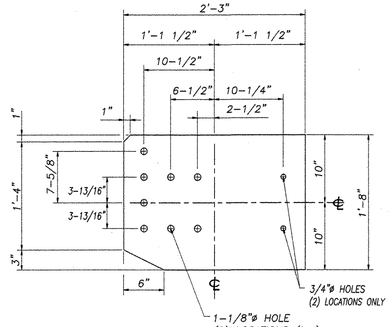
TYPICAL (4) LOCATIONS



TERMINAL CONNECTOR

10 GAUGE (AASHTO M180 B2)

MK-TC



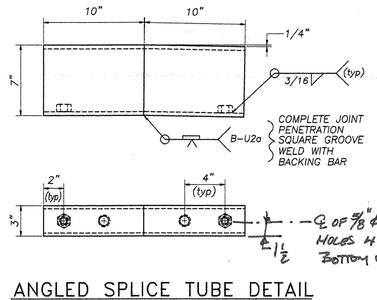
BILL OF MATERIAL

BRIDGE No. 38

Mk.	Qty.	Description	Size/Shape	Length/Qty. Per unit	Material
TU1	2	APPROACH RAIL TUBE (UPPER)	TS 8x4x5/16"	9'-9 5/8"	A500 Gr. B
	2	APPROACH RAIL TUBE (LOWER)	TS 4x4x1/4"	9'-9 5/8"	A500 Gr. B
TU2	2	APPROACH RAIL TUBE (UPPER)	TS 8x4x5/16"	9'-8 3/4"	A500 Gr. B
	2	APPROACH RAIL TUBE (LOWER)	TS 4x4x1/4"	9'-8 3/4"	A500 Gr. B
PO	16	STEEL POST	W6 x 25	8'-0"	A709 Gr. 50
	320	WOOD POST	6x8	7'-0"	
	320	WOOD OFFSET BLOCK	6x8	1'-6"	
SPU	4	SPLICE TUBE FOR 8 x 4 RAIL TUBE	TS 7x3x3/8		
		TUBE	TS 7x3x5/16"	1'-8"	A500 Gr. B
		LOCK NUTS	5/8"	2 pcs.	A563
SPL	4	SPLICE TUBE FOR 4 x 4 RAIL TUBE	TS 3x3x5/16		
		TUBE	TS 7x3x1/4"	1'-8"	A500 Gr. B
		LOCK NUTS	5/8"	2 pcs.	A563
TC	4	TERMINAL CONNECTOR	10 Ga.	2'-6"	M180 B2
CP	4	CONNECTION PLATE	PL 3/8 x 1'-8"	2'-3"	A709 Gr. 36
DP	4	DEFLECTOR PLATE	PL 3/8 x 4"	1'-9 1/2"	A709 Gr. 36
ECU	4	END CAP FOR 8 x 4 RAIL TUBE			
		PLATE	1/8 x 1" x1"	4 pcs.	A709 Gr. 36
		PLATE	PL 3/8 x 4"	8"	A709 Gr. 36
ECL	4	END CAP FOR 4 x 4 RAIL TUBE	1/8x1"x1"		
		PLATE	PL 3/16 x	4 pcs.	A709 Gr. 36
		PLATE	PL 3/8 x 4"	4"	A709 Gr. 36
TTP	4	THRIE TRANSITION PANEL	12 Ga.	7'-3 1/2"	M180 A2
--	64	3/4"ø x 6" LG. ROUND HEAD BOLT W/NUT & ROUND WASHER			A325
--	4	3/4" x 2" LG. ROUND HEAD BOLT W/NUT			A307
--	76	5/8" x 1'-8" LG. POST BOLT W/DBL RECESSED NUT, PLATE & ROUND WASHER			A307
--	32	5/8" x 1 3/4" LG. HEX BOLT W/WASHER			A325
--	80	5/8" x 1 1/4" LG. PANEL SPLICE BOLT W/DBL RECESSED NUT			A307
--	32	3/4"x 1/2" LG. (SCH 40) SPACER PIPE			A53 Gr. B

No Expansion Joint at Abut #12
Per Note 6 on Sheet 12

A307

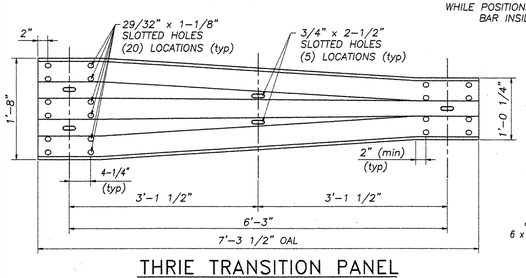


ANGLED SPLICE TUBE DETAIL

UPPER RAIL SPLICE SHOWN

SEE BRIDGE RAIL DETAILS (SHOP DRAWING #1354) FOR ADDITIONAL SPLICE TUBE FABRICATION & ASSEMBLY DETAILS

LOWER RAIL DOES NOT REQUIRE BENT SPLICE TUBE TO MATCH TUBE ANGLE – USE STRAIGHT SPLICE TUBE



THRIE TRANSITION PANEL

12 GAUGE (AASHTO M180 A2)

MK-TTP

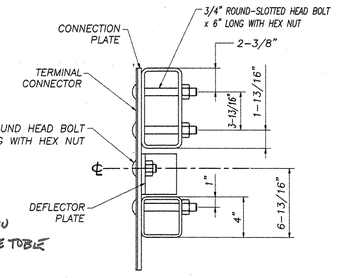
MATERIALS

Rail bars.....ASTM A500 GR B or ASTM A501
Rail posts.....ASTM A709 GR 50
All other shapes & plates.....ASTM A709 GR 36
Round-slotted head bolts for Rail-Post connections ..... M164 (type I)
Hex head bolts for tube splice joints ..... M164 (type 1)
All other bolts [unless noted].....ASTM A307

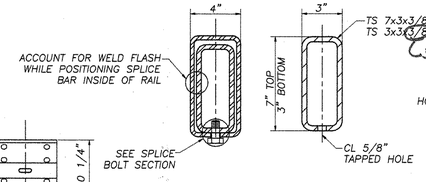
Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.

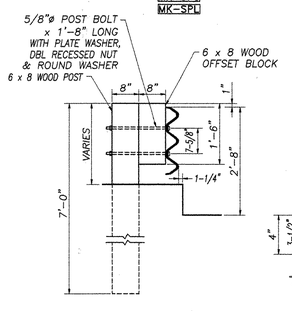


SECTION B–B

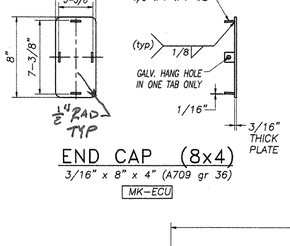


SPLICE TUBE SECTION

MK-SPU
MK-SPL



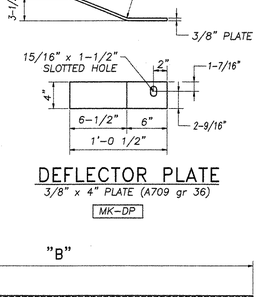
SECTION A–A



END CAP (8x4)

3/16" x 8" x 4" (A709 gr 36)

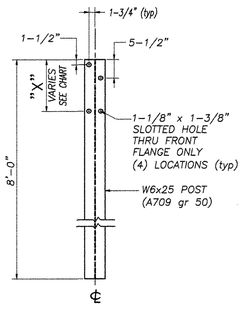
MK-ECU



DEFLECTOR PLATE

3/8" x 4" PLATE (A709 gr 36)

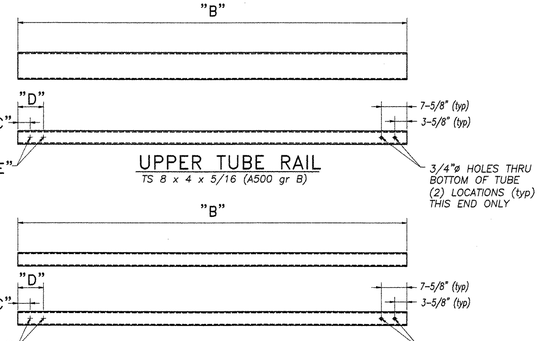
MK-DP



STEEL POST

STEEL POST CHART

No.	" X "
#1	1'-3 3/4"
#2	1'-3 1/2"
#3	1'-3 3/16"
#4	1'-2 7/8"



UPPER TUBE RAIL

TS 8 x 4 x 5/16 (A500 gr B)

LOWER TUBE RAIL

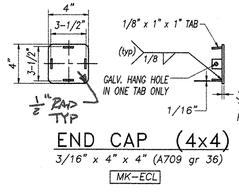
TS 4 x 4 x 1/4 (A500 gr B)

No Expansion Joint at Abut #2
Per Note 6 on Sheet 12

STEEL TUBE DIMENSIONS

No.	JOINT "A"	OAL "B"	"C"	"D"	"E"
TU-1	3/4" SPLICE	9'-9 5/8"	3-5/8"	7-5/8"	3/4" DIA HOLES
TU-2	2-1/2" EXPANSION	9'-8 3/4"	2-3/4"	6-3/4"	3/4" x 2-1/2" SLOTTED HOLES

SEE BRIDGE PLANS (SHOP DRAWING #1354) FOR LOCATIONS OF FIXED & EXPANSION JOINTS



END CAP (4x4)

3/16" x 4" x 4" (A709 gr 36)

MK-ECL

REVISIONS		
No.	Remarks	Date
0	Initial submittal	6/9/03

GENERAL ERECTION NOTES

1. *ALL BRIDGE RAIL APPROACH RAIL MATERIALS, DIMENSION SIZES, AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGERAIL UNLESS OTHERWISE NOTED.*
2. *CARRIAGE BOLTS SHALL BE ASTM A307 AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED)*
3. *CUT & WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD B–L1A WITH BACKING BAR.*
4. *REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 30 ft. (OR CLOSEST POST) WITH 2 NO. 8 x 3/4" SELF TAPPING SCREWS. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052–H32.*
5. *REFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVERS LEFT AND SILVER ON THE RIGHT.*
6. *All work and materials shall conform to the provisions of Section 525 – Railings of the Vermont Standard Specifications for Construction.*
7. *Tubing & posts shall meet the requirements of Section 732 – Railing materials of the Standard Specifications for Construction.*
8. *All exposed cut or sheared edges shall be rounded to a 1/16" radius & be free of burrs.*
9. *Rail posts shall be set normal to grade.*
10. *Sections of rail bar shall be attached to a minimum of two (2) posts and preferably to at least four (4) posts.*
11. *Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "X" at 45° F and will be adjusted in the field by the engineer.*
12. *All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.*
13. *Rail bars shall be attached to steel posts using 3/4"ø full diameter body head bolts AASHTO M164 (Type–I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.*
14. *Holes in rails for attachment to posts will be field–drilled. Holes shall be coated with an approved zinc–rich paint prior to erection.*
15. *Radiused rails (if required) will be shop–curved. No field–bending of rail tubes.*
16. *The drop–weight tear test in section 732 shall not apply to the structure tubing on this standard.*
17. *The rail posts & base plates shall be tested for impact properties in accordance with ASTM A370 Charpy Impact Testing, using a type A specimen.*

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED APPROVED AS REVISED REJECTED	NONE CONFIRM RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY. NOT FOR PERFORMING HIS WORK IN A SAFE MANNER.

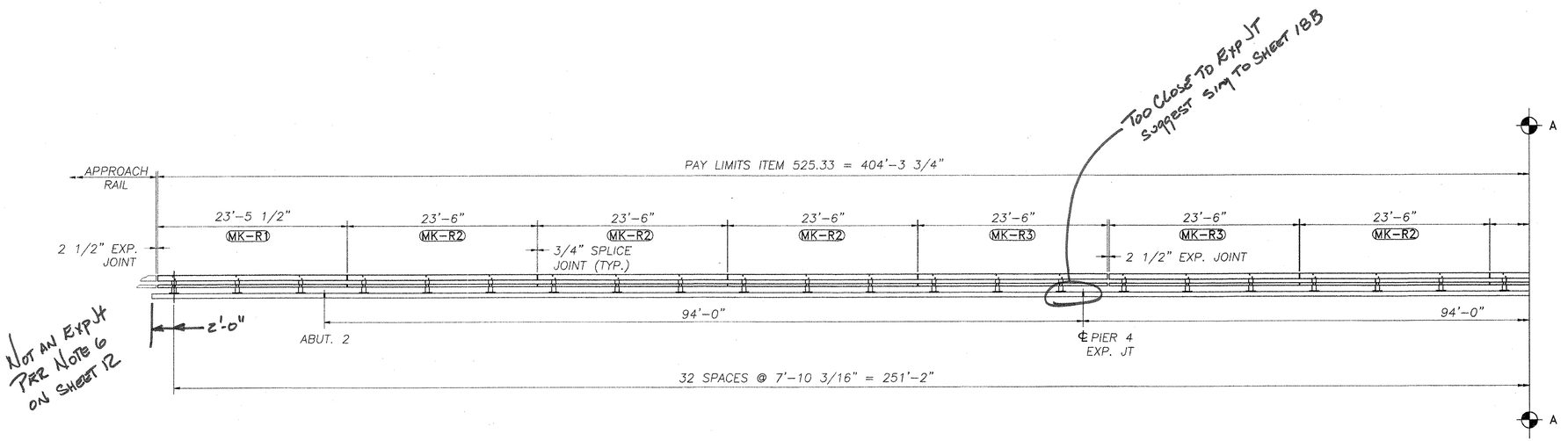
BY _____ DATE 8/26/03

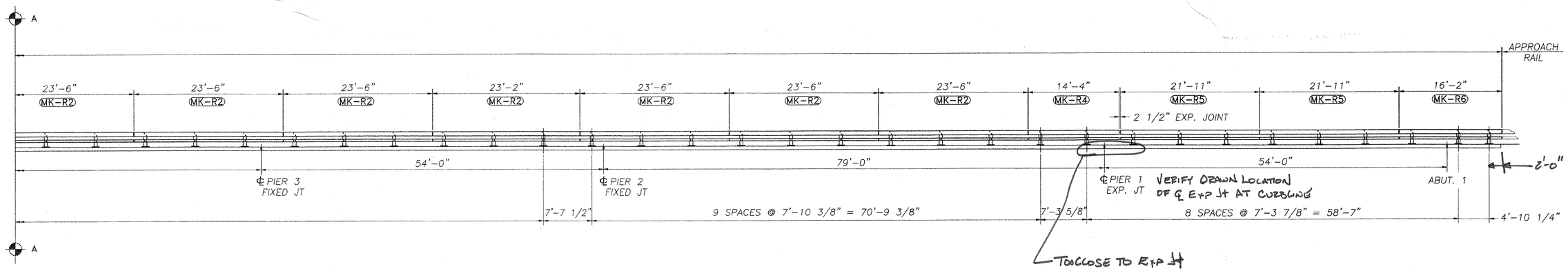
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 621.72 – GUARDRAIL APPROACH SECTION – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 101
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE NONE
HSC REFERENCE NO. 1355
SIZE D REVISION 0
SHEET NO. 1 of 1





ELEVATON – NORTH-WEST BRIDGE RAIL
FACING (NW) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 404'-3 3/4"

SUPERCEDED

TOTAL PAY LIMIT ITEM (NORTH AND SOUTH RAIL)
ITEM 525.33 = 832'

BILL OF MATERIAL (ITEM 563.22)

Mk.	Qty.	Description	Size/Shape	length/qty. per unit	Material
P1	53	BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE			
	53	POST UPRIGHT	W6 x 25	2'-03/8"	A709 Gr. 50
	53	POST BASE PLATE	1" x 10"	1'-2"	A709 Gr. 50
S1	17	UPPER SPLICE TUBE FOR 8 x 4 RAIL			
	17	TUBE	TS 7x3x3/8	1'-8"	A500 Gr. B
	34	LOCK NUTS	5/8"	2 pcs.	M164 TYPE I
S2	17	LOWER SPLICE TUBE FOR 4 x 4 RAIL			
	17	TUBE	TS 3x3x5/16	1'-8"	A500 Gr. B
	34	LOCK NUTS	5/8"	2 pcs.	A563M Gr. A
R1	1	UPPER RAIL	TS 8x4x5/16	23'-5 1/2"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	23'-5 1/2"	A500 Gr. B
R2	11	UPPER RAIL	TS 8x4x5/16	23'-6"	A500 Gr. B
	11	LOWER RAIL	TS 4x4x1/4	23'-6"	A500 Gr. B
R3	2	UPPER RAIL	TS 8x4x5/16	23'-6"	A500 Gr. B
	2	LOWER RAIL	TS 4x4x1/4	23'-6"	A500 Gr. B
R4	1	UPPER RAIL	TS 8x4x5/16	14'-4"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	14'-4"	A500 Gr. B
R5	2	UPPER RAIL	TS 8x4x5/16	21'-11"	A500 Gr. B
	2	LOWER RAIL	TS 4x4x1/4	21'-11"	A500 Gr. B
R6	1	UPPER RAIL	TS 8x4x5/16	16'-2"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	16'-2"	A500 Gr. B
AP	53	ANCHOR PLATE	3/8 x 9 3/8	1'-1"	A709 Gr. 36
AS	212	ANCHOR STUD	1" DIA.	12"	A449
H1	424	HEX NUT	1" DIA.	– – –	A563
H2	212	JAMB NUT	1" DIA.	– – –	A563
H3	212	WASHER	1" DIA.	– – –	F436
H4	212	ROUND HEAD BOLT	3/4" DIA.	6"	M164 TYPE I
H5	212	HEX NUT	3/4" DIA.	– – –	A563
H6	212	WASHER	3/4" DIA.	– – –	F436
H7	70	SPLICE BOLT	5/8" DIA.	1 3/4"	M164 TYPE I
H8	70	WASHER	5/8" DIA.	– – –	F436
H9	70	PIPE SPACER (SCH. 40)	3/4" DIA.	1/2"	A563
BP	53	BEARING PAD	1/8 x 10	1'-2"	M251

REVISIONS

No.	Remarks	Date
0	Initial submittal	6/9/03

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED	NONE
APPROVED AS REVISED	CONFIRM
REJECTED	RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS FOR SELECTING FABRICATION PROCESSES FOR THE TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

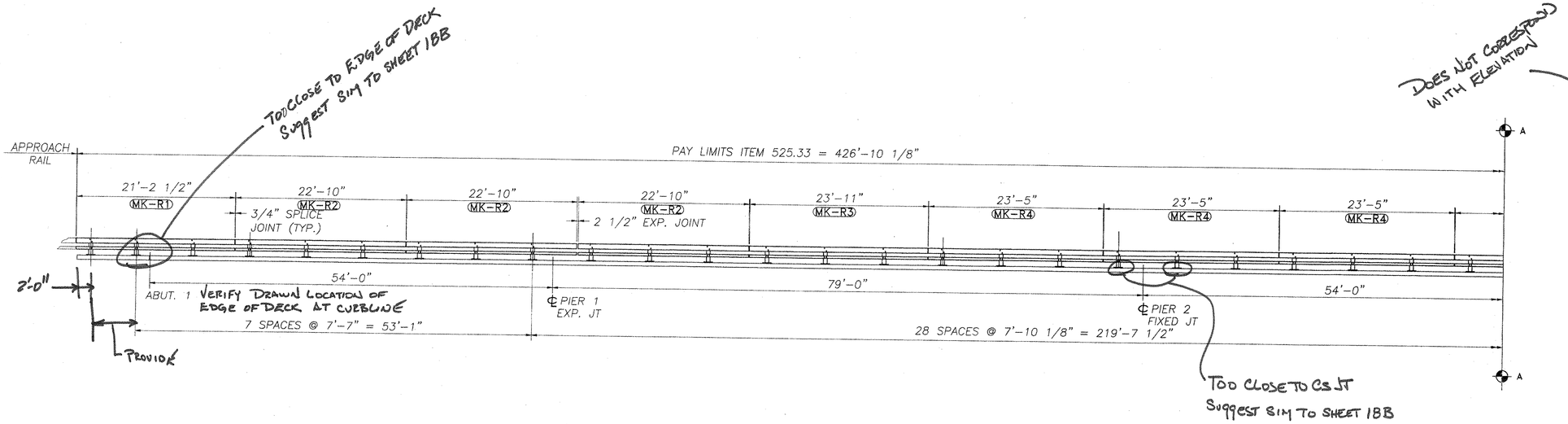
BY _____ DATE 8/6/03

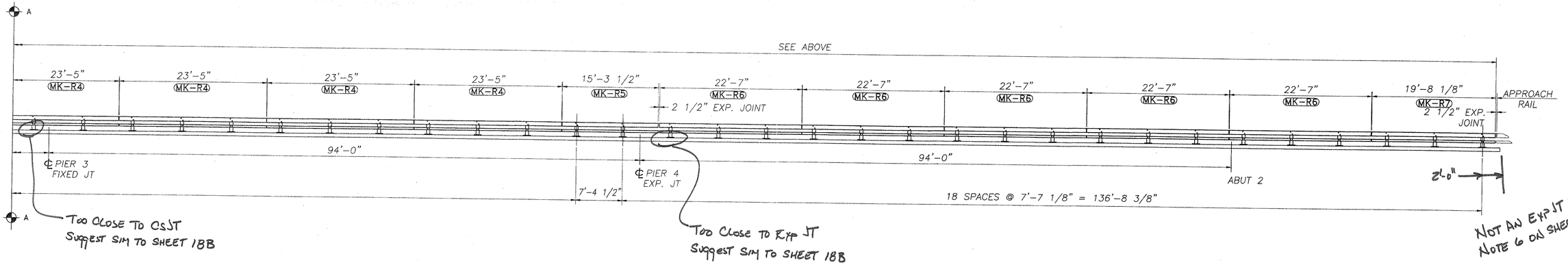
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 102
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE 1/8"=1'-0"
HSC REFERENCE NO. 1354
SIZE D REVISION 0
SHEET NO. 1 of 3





ELEVATON – SOUTH-EAST BRIDGE RAIL
FACING (SE) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 426'-10 1/8'

BILL OF MATERIAL (ITEM 563.22)

Mk.	Qty.	Description	Size/Shape	length/qty. per unit	Material
P1	56	BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE			
	56	POST UPRIGHT	W6 x 25	2'-03/8"	A709 Gr. 50
	56	POST BASE PLATE	1" x 10"	1'-2"	A709 Gr. 50
S1	18	UPPER SPLICE TUBE FOR 8 x 4 RAIL			
	18	TUBE	TS 7x3x3/8	1'-8"	A500 Gr. B
	36	LOCK NUTS	5/8"	2 pcs.	M164 TYPE I
S2	18	LOWER SPLICE TUBE FOR 4 x 4 RAIL			
	18	TUBE	TS 3x3x5/16	1'-8"	A500 Gr. B
	36	LOCK NUTS	5/8"	2 pcs.	A563M Gr. A
R7	1	UPPER RAIL	TS 8x4x5/16	21'-2 1/2"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	21'-2 1/2"	A500 Gr. B
R8	1	UPPER RAIL	TS 8x4x5/16	22'-10"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	22'-10"	A500 Gr. B
R9	2	UPPER RAIL	TS 8x4x5/16	22'-10"	A500 Gr. B
	2	LOWER RAIL	TS 4x4x1/4	22'-10"	A500 Gr. B
R10	8	UPPER RAIL	TS 8x4x5/16	23'-11"	A500 Gr. B
	8	LOWER RAIL	TS 4x4x1/4	23'-11"	A500 Gr. B
R11	1	UPPER RAIL	TS 8x4x5/16	23'-5"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	23'-5"	A500 Gr. B
R12	1	UPPER RAIL	TS 8x4x5/16	15'-3 1/2"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	15'-3 1/2"	A500 Gr. B
R13	1	UPPER RAIL	TS 8x4x5/16	22'-7"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	22'-7"	A500 Gr. B
R14	1	UPPER RAIL	TS 8x4x5/16	22'-7"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	22'-7"	A500 Gr. B
R15	1	UPPER RAIL	TS 8x4x5/16	19'-8 1/8"	A500 Gr. B
	1	LOWER RAIL	TS 4x4x1/4	19'-8 1/8"	A500 Gr. B
AP	56	ANCHOR PLATE	3/8 x 9 3/8	1'-1"	A709 Gr. 36
AS	224	ANCHOR STUD	1" DIA.	12"	A449
H1	448	HEX NUT	1" DIA.	- - -	A563
H2	224	JAMB NUT	1" DIA.	- - -	A563
H3	224	WASHER	1" DIA.	- - -	F436
H4	224	ROUND HEAD BOLT	3/4" DIA.	6"	M164 TYPE I
H5	224	HEX NUT	3/4" DIA.	- - -	A563
H6	224	WASHER	3/4" DIA.	- - -	F436
H7	74	SPLICE BOLT	5/8" DIA.	1 3/4"	M164 TYPE I
H8	74	WASHER	5/8" DIA.	- - -	F436
H9	74	PIPE SPACER (SCH. 40)	3/4" DIA.	1/2"	A563
BP	56	BEARING PAD	1/8 x 10	1'-2"	M251

SUPERCEDED

REVISIONS		
No.	Remarks	Date
0	Initial submittal	6/9/03

VENDOR SUBMITTAL REVIEW

REVIEW STATUS		CONTRACTOR ACTION	
APPROVED		NONE	
APPROVED AS REVISED		CONFIRM	
REJECTED	N	RESUBMIT	N

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

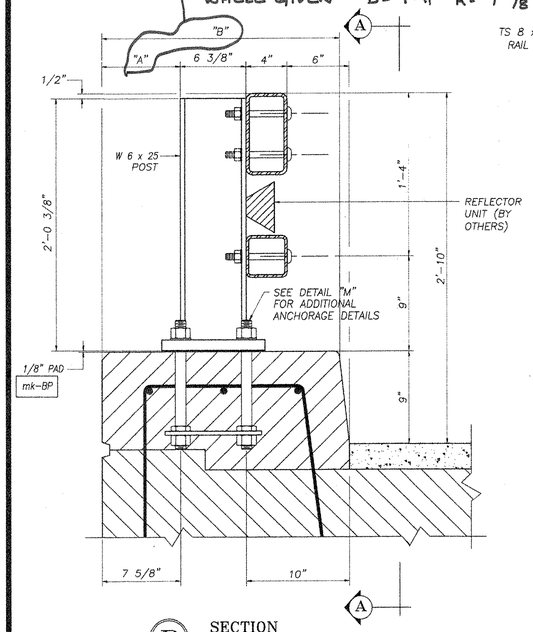
BY _____ DATE 6.6.03

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

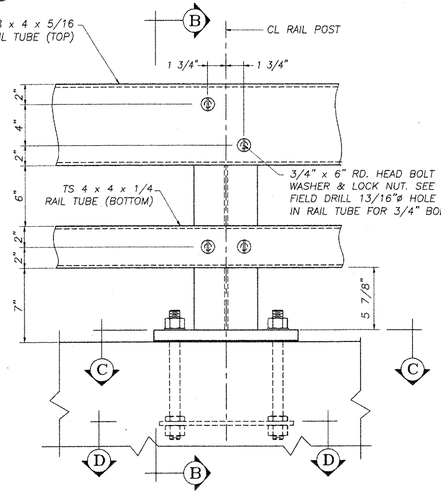
ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR
103
SUB CONTRACTOR
F.R. Lafayette, Inc.

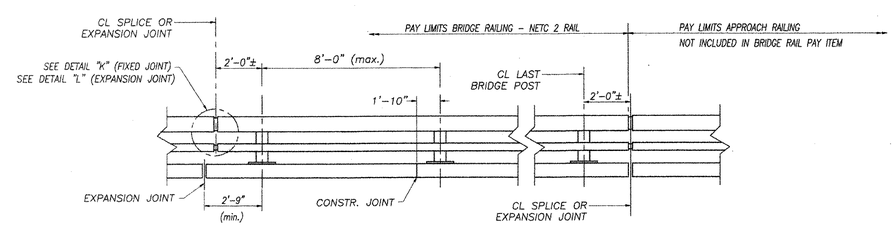
DRAWN MHM
CHECKED
DATE 5-28-03
SCALE 1/8"=1'-0"
NSC REFERENCE NO. 1354
SIZE D REVISION 0
SHEET NO. 2 of 3



B SECTION
POST & CURB

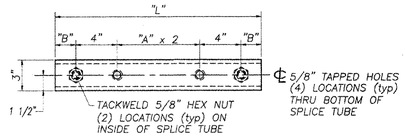


A ELEVATION

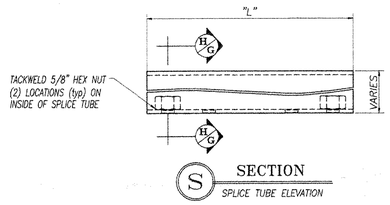


TYPICAL BRIDGE RAILING ELEVATION

NOTE: SPLICE TUBES & HARDWARE FOR CONNECTION BETWEEN BRIDGE RAIL & BRIDGE APPROACH RAIL ARE INCLUDED IN APPROACH RAIL PAY ITEM. NOT INCLUDED UNDER BRIDGE RAIL ITEM 525.33



J DETAIL
SPLICE TUBE - BOTTOM VIEW
(SEE CHART FOR DIMENSIONS)



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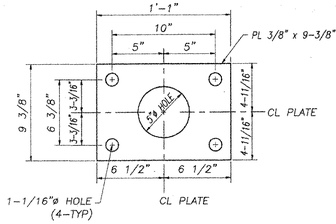
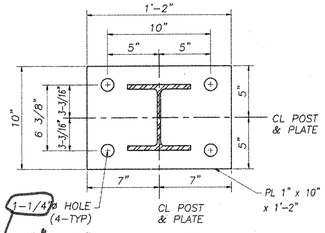
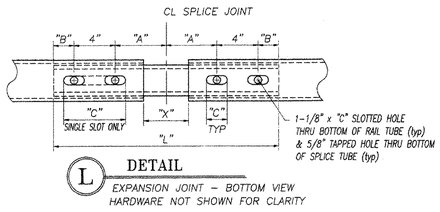
SPLICE TUBE ELEVATION



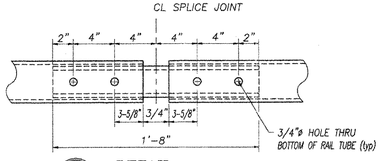
D SECTION
ANCHOR PALTE
mk-AP



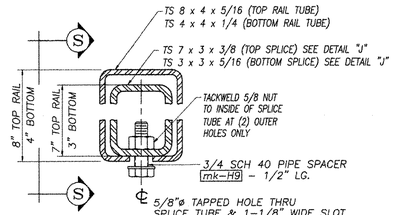
C SECTION
RAIL POST BASE PLATE
SEE DETAIL "F" FOR POST-BASE WELD



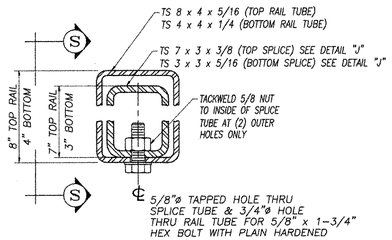
L DETAIL
EXPANSION JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY



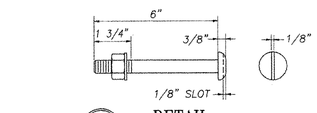
K DETAIL
SPLICE JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY



H SECTION
THRU EXPANSION SPLICE JOINT

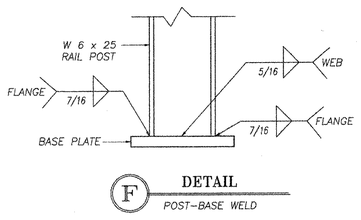


G SECTION
THRU FIXED SPLICE JOINT

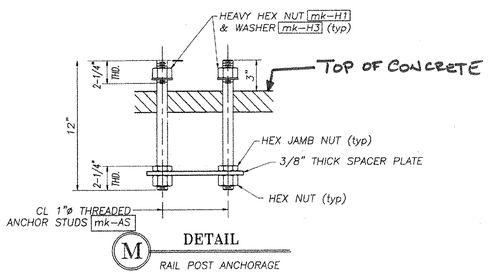


E DETAIL
POST BOLT
mk-H4

3/4"ø M164 (TYPE I) ROUND HEAD BOLT WITH WASHER mk-H6 & LOCKNUT mk-H5 (typ) FOR ALL RAIL TO POST CONNECTIONS, THRU "FIELD-DRILLED" 13/16"ø HOLES IN RAIL TUBE



F DETAIL
POST-BASE WELD



M DETAIL
RAIL POST ANCHORAGE

SPLICE & EXPANSION JOINT TABLE					
"T"	"A"	"B"	"C"	"L"	"X"
SPLICE	4"	2"	--	20"	3/4"
≤4"	4"	2"	2-1/2"	20"	2-1/2"
>4" ≤ 6-1/2"	5-1/2"	2-3/8"	3-1/2"	23-3/4"	4"
>6 1/2" ≤ 9"	6 1/2"	3 3/8"	9" *	27 3/4"	5"
>9" ≤ 13"	8-1/2"	4-3/8"	11" *	33-3/4"	7"

"T" = TOTAL REQUIRED MOVEMENT * = SINGLE SLOT

GENERAL ERECTION NOTES

1. All work and materials shall conform to the provisions of Section 525 - Railings of the Vermont Standard Specifications for Construction.
2. Tubing & posts shall meet the requirements of Section 732 - Railing materials of the Standard Specifications for Construction.
3. All exposed cut or sheared edges shall be rounded to a 1/16" radius & be free of burrs.
4. Rail posts shall be set normal to grade.
5. Sections of rail bar shall be attached to a minimum of two (2) posts and preferebly to at least four (4) posts.
6. Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "X" at 45° F and will be adjusted in the field by the engineer.
7. All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.
8. Rail posts anchoring nuts shall be tightened to a snug-tight fit and given an additional 1/8 turn.
9. Rail bars shall be attached using 3/4"ø full diameter body head bolts AASHTO M164 (Type-I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.
10. Holes in rails for attachment to posts will be field-drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
11. Radiused rails (if required) will be shop-curved. No field-bending of rail tubes.
12. The drop-weight tear test in section 732 shall not apply to the structure tubing on this standard.
13. The rail posts & base plates shall be tested for impact properties in accordance with ASTM A370 Charpy Impact Testing, using a type A specimen.
14. All welds are to be cleaned prior to galvanizing to insure proper bonding of zinc to welded areas.

MATERIALS

Rail bars.....ASTM A500 GR B or ASTM A501
Rail posts.....ASTM A709 GR 50
All other shapes & plates.....ASTM A709 GR 36
Anchor studs.....ASTM A449
All other bolts [unless noted].....AASHTO M164, TYPE I

Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	6/9/03

VENDOR SUBMITTAL REVIEW

REVIEW STATUS	CONTRACTOR ACTION
APPROVED APPROVED AS REVISED REJECTED	NONE CONFIRM RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

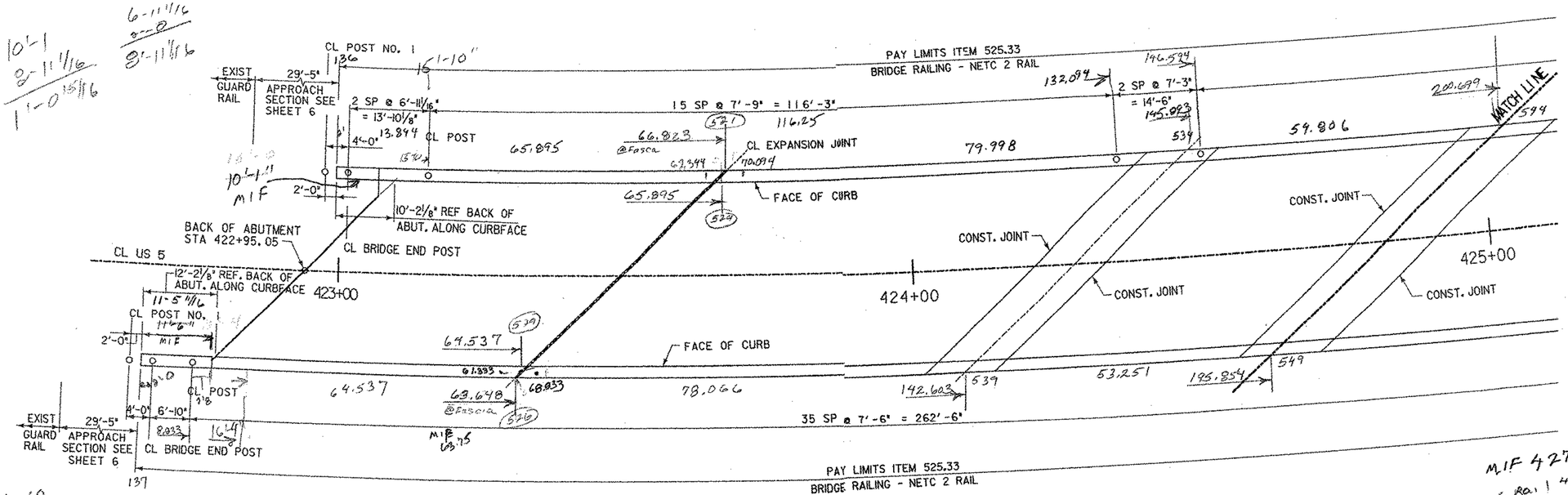
BY [signature] DATE 6.9.03

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 - BRIDGE RAILING - NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 104
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN	MHM
CHECKED	
DATE	5-28-03
SCALE	NONE
HSC REFERENCE NO.	1354
SIZE	D
REVISION	
SHEET NO.	3 of 3



NOTES:

1. FOR NETC 2 - RAIL BRIDGE RAILING DETAILS AND INFORMATION ABOUT THE NETC GUARDRAIL APPROACH SECTION, SEE STANDARD SHEET BRI- BR2-, BR3- AND BR4- AND LAYOUT SHEET, SHEET 6
2. END OF WINGWALL HAVE BEEN LOCATED APPROXIMATELY BY VOAT SURVEY. CONTRACTOR SHALL VERIFY REQUIRED RAIL LENGTHS PROIR TO SUMITTING SHOP DRAWING FOR APPROVAL.
3. RAIL EXPANSION JOINT SHALL BE LOCATED 2'-0" FROM CL OF THE POST ADJACENT TO THE EXPANSION JOINT AND ON THE EXPANSION JOINT SIDE OF THE POST.
4. CENTERLINE OF POST IS 16'-6 3/16" OFF THE CENTER OF THE BRIDGE.

RAILING LAYOUT

SCALE 1" - 10'-0

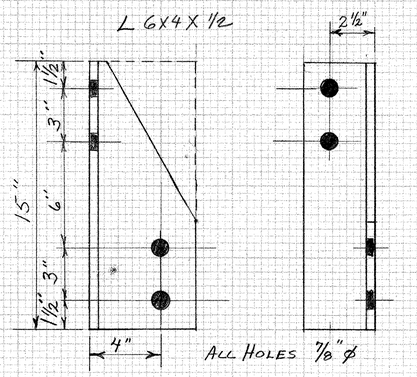
STONE & WEBSTER, INC.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 38
Highway No. I-91	Log Sta.
	Surv. Sta.

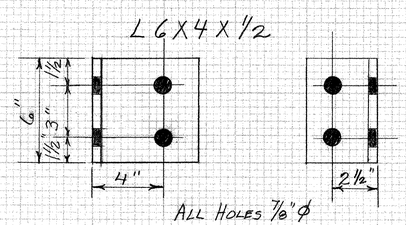
BRIDGE RAILING PLAN

Designed By E. JONHSTON	Drawn By R. FERRANTE
Checked By E. JONHSTON Date 4-24-03	Bridge Design Supervisor E. JOHNSTON Date 4-24-03
PROJECT HARTLAND	PROJECT NO. IM 091-1(36)
Drawing Name za272ri.dgn	
Bridge Sheet No.	Sheet 18B of 85



PIER 1 HOPPER ANGLE

SCALE: 1" = 4"



PIER 4 HOPPER ANGLE

SCALE: 1" = 4"

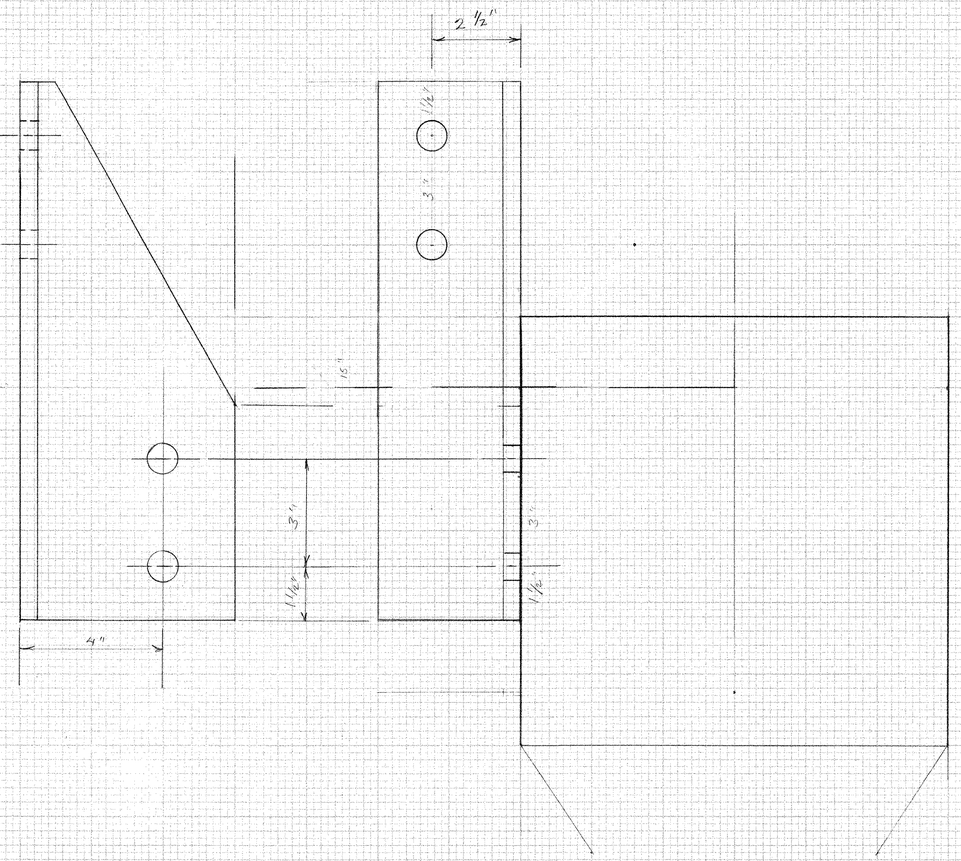
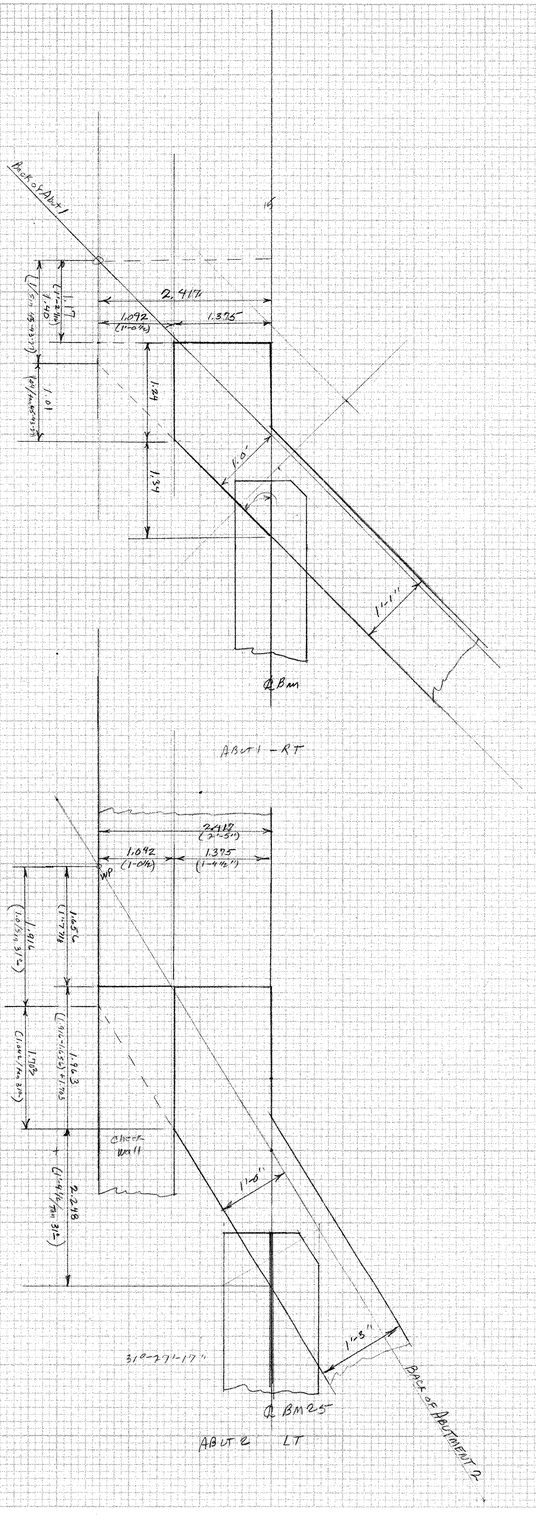
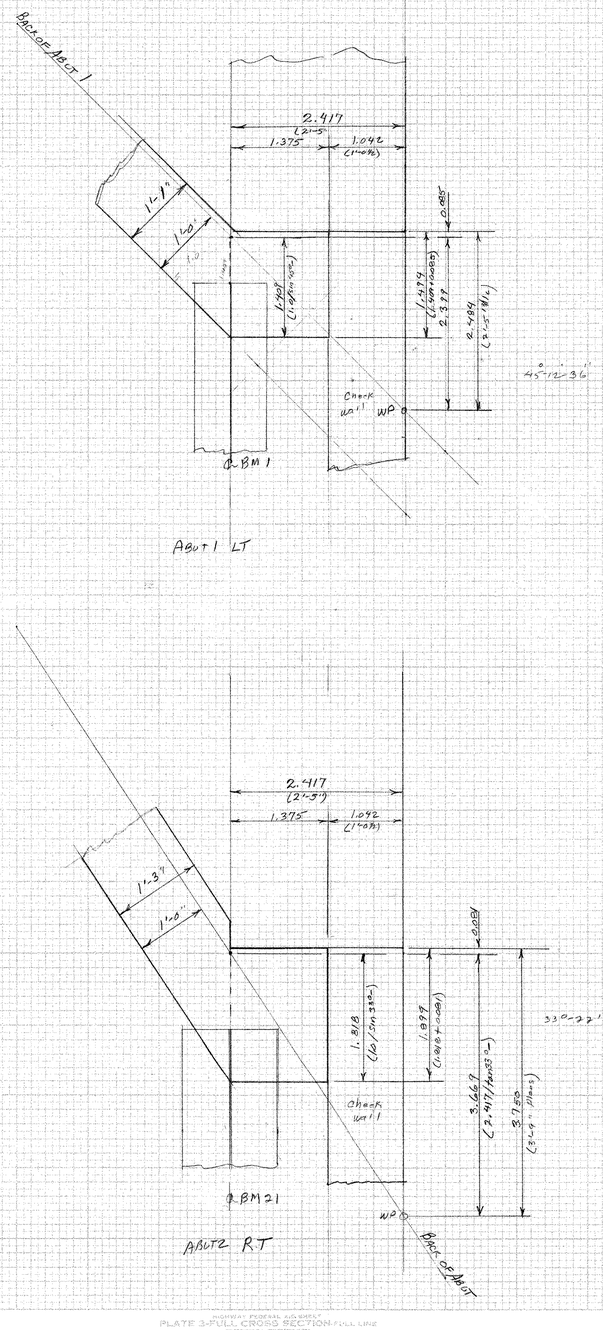


PLATE 3-FULL CROSS SECTION-FULL LINE



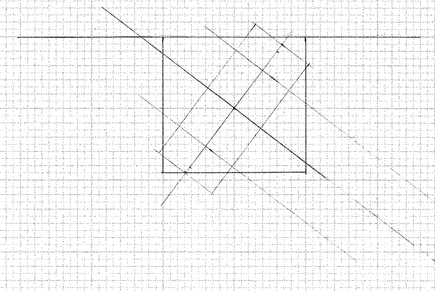
ABUT 1 – RT



ABUT 1 LT

ABUT 2 LT

ABUT 2 RT



HARTLAND
ACIM091-1(36)

CURTAIN WALL DETAILS

FINAL SURVEY
ORIGINAL SURVEY
BY
DATE
SURVEYED
DRAWN
TRACED
INCPT. BOOK
ESTIMATE
SHEETS
NO.
CHECKED
QUANTITIES CHECKED

FINAL SURVEY
SURVEYED BY
DRAWN BY
CHECKED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL SURVEY
SURVEYED BY
DRAWN BY
CHECKED BY
QUANTITIES BY
CHECKED BY
DATE

120 110 100 90 80 70 60 50 40 30 20 10

480
470
460
450
480
470
450
440

Elev 439.4
Exist Ht 3
Exist Ht 2
10'
18'

Elev 448.87
15.42'
FG 487.70
20° Elbow
8'
Type 8
Center of DI @ 14.42' Lt
Bot of DI Elev 481.5
Elev 482.8
35.5' Lt
2'
90'
25° Elbow
Elev. 443.5
104'-Lt
Elev 444.5
93'-Lt
8'
1'

422475
New 12" x 86' CMP
w/ 1-20° Elbow, 1-25° Elbow
DI @ Inlet, Type E Grate

3- 20 ft lengths
3- 10 ft lengths
1- 20° Elbow
1- 25° Elbow
7- 24" Coupling Bands

HIGHWAY FEDERAL AID SYSTEM
PLATE 3 FULL CROSS SECTION ROLL LINE
MATERIAL FURNISHED
PRINTED IN U.S.A.

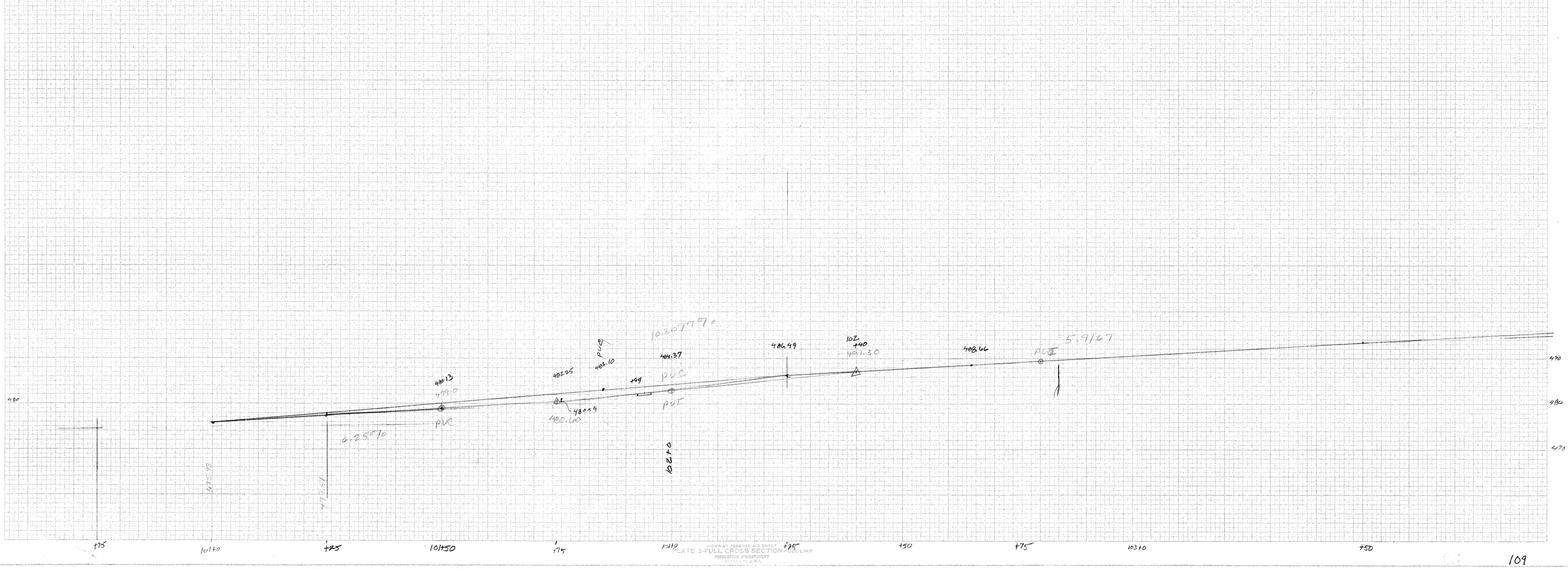
105

11/16

108

FINAL SURVEY
SURVEYED BY:
PLOTTED:
NOTE BOOK:
TERMINATE:
AREAS:
PAGE:
DATE:
BY:

ORIGINAL SURVEY
SURVEYED BY:
PLOTTED:
NOTE BOOK:
TERMINATE:
AREAS:
PAGE:
DATE:
BY:



HIGHWAY FEDERAL AID PROJECT
PLATE 3-FULL CROSS SECTIONAL LINE
MISSISSIPPI HIGHWAY DEPARTMENT
JACKSON, MISS.